PROJECT REVIEW

1992-1993 to 1995-1996

104-07662/

PROJECT REVIEW

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HABITAT
CONSERVATION
FUND

A Message From the Chair of the Habitat Conservation Fund, Public Advisory Board

The establishment of the Habitat Conservation Fund (HCF) is one of the most important wildlife conservation innovations ever introduced in the province of British Columbia. The primary purpose of HCF is to expend available funds in ways that are judged most likely to improve habitat for all fish and wildlife in BC.

Consumptive users of certain wildlife species contribute the largest part of the funds used for Habitat Conservation Fund projects - the hunters, trappers, anglers and guides from all regions of the province. They have a serious concern for all wildlife, not just the few species for which they can hunt, trap or fish. This is of special importance in a time when ever-growing proportions of our population live in areas with minimal contact with wilderness and wildlife.

HCF requires detailed knowledge of conditions before a project is approved for funding. Follow-up studies are done through various monitoring techniques to determine the outcomes of funded projects. In this way, we can continue to improve the effectiveness of expenditures and can be comfortable that the many hundreds of hours of volunteer labour devoted to many of the projects are maximized to their fullest potential.

The Habitat Conservation Fund has made a significant impact on habitat for fish and wildlife in BC and in doing so, continues to promote and maintain a rich wildlife heritage in all its variety, distribution, numbers and productivity across the province.

Ian McTaggart-Cowan, Chair
HCF Public Advisory Board

The Habitat Conservation Fund, Public Advisory Board

The Public Advisory Board consists of volunteers appointed by the Minister of Environment, Lands and Parks for renewable two-year terms. Appointees are recognized for their contributions to, and knowledge of, fish and wildlife conservation. Members bring a wide range of expertise including financial, business, legal, research and education to their tenure. They are selected on a non-partisan basis and, since they do not represent any particular interest group, the Board acts on behalf of all people in British Columbia interested in fish, wildlife and their habitats.

The Board meets regularly around the province to review project proposals, recommend HCF policy and learn first hand about progress on project implementation. The Public Advisory Board also reviews and advises the Minister on proposals to acquire land and water interests of ecological significance.

The Board Members for the 1992 to 1996 period were: Dr. Ian McTaggart Cowan, Chair, Dr. Robin Love, Dr. VC Brink, Barbara Nield, Barbara Brown, Dr. Tom Northcote, Evelyn Fahselt, Dr. Craig Orr, John Simkins, Ruth Kendall, Tom Sterling, Jeanne McCartney, and Ron Taylor.

The Ministers responsible during the period of this review were The Honourable John Cashore, The Honourable Moe Sihota (twice), and The Honourable Elizabeth Cull.

Project Review

1992-1993 to 1995-1996

An Opportunity for Fish and Wildlife

British Columbia has the greatest diversity of wildlife and freshwater fish species in Canada. To conserve British Columbia's remarkable wildlife and fish resources, it is important to minimize the adverse impact of human activity, to enhance the abundance and diversity of species, and to preserve remaining pristine habitats. However, the costs of managing or purchasing wildlife habitat continue to rise. Habitat conservation projects must compete with many other government programs and non-government causes for funds.

The Habitat Conservation Fund (HCF) provides independent financing to deal with these problems directly. Surcharges on hunting, fishing, trapping and guiding licenses, money from the Crown Land Account, compensation funds from industry, donations and cost sharing funds from co-operating groups are allocated through the Fund to habitat and species restoration, enhancement and acquisition. All proceeds, including interest, are used exclusively for these projects.

Three Functions: Three Accounts

The HCF consists of three main accounts which reflect its three main functions: Enhancement, Acquisition and Compensation.

Financial statements for the three accounts are located on page 41 of this review.

THE ENHANCEMENT ACCOUNT

This account finances projects that enhance important fish, fish habitat, wildlife and wildlife habitat. This includes habitats that have been purchased, as well as those on Crown lands.

Historically, most enhancement projects were implemented by BC Environment staff; however due to the increasing number of projects, more of the work is now contracted out to non–profit conservation groups. This practice provides many employment opportunities, particularly in rural areas. This account receives money from the following sources:

LICENSE SURCHARGES

The largest revenue source for the Habitat Conservation Fund is based on the "user-pay" principle, involving a surcharge on all hunting, fishing, trapping and guiding licenses sold in BC. During the 1992-1993 to 1995-1996 period, the average of surcharge revenue generated from the sale of licenses was $3.5 million annually.

DONATIONS, BEQUESTS AND GIFTS

Tax deductible donations, bequests and gifts from concerned individuals, corporations and conservation organizations provide revenue for enhancement projects.

INTEREST

All interest on revenue collected is invested in projects of the Habitat Conservation Fund.

THE ACQUISITION ACCOUNT

This account is used for the direct purchase of essential habitat from private owners or corporations. Land owners have sole authority over the management of habitat on private holdings. Securing these areas by outright purchase can be an extremely costly and lengthy process, and is pursued only when management rights cannot be obtained through other means such as leases, covenants, easements or stewardship agreements. This account receives money from the following sources:

CROWN LAND ACCOUNT

The Crown Land Account provides funding each year for acquisition projects. The account's funds are derived from interest earned on the Crown Land Account and money collected through lease, sale, and development of Crown lands.

DONATIONS, BEQUESTS AND GIFTS

Tax deductible donations, bequests and gifts also provide revenue for acquisition projects.

THE COMPENSATION ACCOUNT

This account accepts money from corporations and individuals as compensation for loss or degradation of fish or wildlife habitat due to detrimental impacts from development. Funds are contributed voluntarily or through court ordered awards. The proceeds are used to acquire and/or enhance other habitats near the site where the development occurred.

Co-Operative Funding

Effective conservation and enhancement requires adequate funding and efficient use of those funds. By encouraging other organizations to cost-share enhancement and acquisition projects, HCF can stretch its dollars and support more worthwhile conservation projects through public/private partnerships.

PROJECT PARTNERSHIPS

Many receive support from sources that are arranged, co-ordinated and administered by project leaders. The Habitat Conservation Fund staff encourages project leaders to seek external support. Many projects receive financial, volunteer or in-kind support from government, conservation organizations, corporations, and educational institutions who match every dollar from HCF funds with partnership dollar donations or in kind participation such as volunteer work.

PROGRAM PARTNERSHIPS

During the 1992-1993 to 1995-1996 period, the Habitat Conservation Fund continued to participate in two formal cost-sharing programs, the Pacific Estuary Conservation Program and the Forest Resource Development Agreement (FRDA).

PACIFIC ESTUARY CONSERVATION PROGRAM (PECP)

HCF participates in the PECP, a co-operative program to acquire, preserve and enhance wetland habitat essential to fish and wildlife on the coast of British Columbia. Since its formation in 1987 through to 1995/96, PECP has secured 7, 251 hectares of estuarine habitat at 53 sites, and helped to obtain conservation designation for large areas of adjacent Crown land. During the 1992/96 period, HCF has been a partner through the PECP in purchasing 15 properties and provided $1.7 million of the total cost.

The other partners in the program are BC Environment, BC Lands, The Nature Trust of BC, Wildlife Habitat Canada, Ducks Unlimited Canada, the Canadian Wildlife Service, The North American Waterfowl Plan, and Fisheries and Oceans, Canada.

FOREST RESOURCE DEVELOPMENT AGREEMENT (FRDA)

FRDA is a national initiative through which Forestry Canada and the BC Ministry of Forests contribute equal amounts of money towards sustainable development of forests in BC. Sustainable development objectives include enhancing environmental health of the forest, stimulating the economy and promoting the future growth of the forest industry.

A significant aspect of FRDA is working in partnerships with many other organizations and institutions (government and non-government). This policy ensures that new forest management information, techniques and approaches are applied in the forests and are available to all resource managers.

In 1991/92 the Ministry of Forests, through the FRDA program, signed an agreement with the Ministry of Environment, Lands & Parks to cost-share selected habitat enhancement projects of the Habitat Conservation Fund. The type of HCF projects eligible for this cost-sharing program include: assessing the impacts of harvest regimes on habitat, testing wildlife species habitat models for application to management plans, addressing agricultural/grazing concerns in relation to wildlife needs and using incremental silviculture or prescribed fire to enhance wildlife habitat. These projects often contain joint silviculture/habitat objectives, such as spacing to increase the average size of the trees while at the same time opening up the canopy to increase or create wildlife forage on the forest floor. Other examples of habitat enhancement include: maintaining areas of deciduous cover for wildlife habitat, keeping wildlife trails unobstructed during spacing operations, clearing stream channels of woody debris and protecting riparian habitats. From 1992/93 to 1995/96, FRDA cost-shared 55 projects, totalling $1.97 million.

Project Selections

An important aspect in the operation of the HCF is the selection of worthwhile projects for support. HCF implements a wide range of projects to benefit a diversity of species. Most project proposals are submitted by provincial government biologists who are well versed in the opportunities and requirements to protect and enhance species and habitats. However, conservation organizations, private industry and members of the public are also encouraged to submit proposals. Project proposals due in early November, are evaluated on the basis of technical merit, public demand and environmental need. They must also be above and beyond those activities that are the basic responsibility of BC Environment. Broad support from the majority of user groups (hunters, anglers, trappers, naturalists, wildlife viewers) is important.

Monitoring is a significant component of all enhancement projects. A reasonable likelihood of success is required for all proposals, and submission guidelines emphasize the need to provide the project parameters to measure the progress and success of a project. Progress reports are reviewed before more funds are allocated to continuing projects. Furthermore, to ensure expenditures are made effectively, detailed technical and financial evaluations may be completed each year on randomly selected projects.

Before project proposals are submitted to the Public Advisory Board, they are scrutinized by technical review committees to ensure they are technically sound, cost effective and meet policy guidelines. The Public Advisory Board meets in February to review the 150-200 proposals received each year. The Board considers the recommendations of the technical committees along with the provincial and regional program priorities before making its recommendations to the Minister of Environment, Lands and Parks who has final approval of expenditure plans.

Acknowledgements

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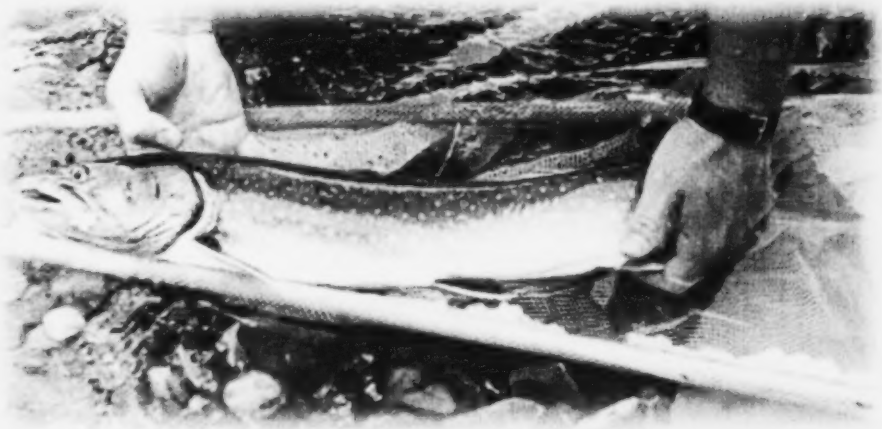


57. *Wigwam River Bull Trout*

ENHANCEMENT ACCOUNT

FISHERIES

The following is a list of the fisheries enhancement projects funded by the Habitat Conservation Fund for the period of this review.

ECOSYSTEM MANAGEMENT

Some projects directly enhance or rehabilitate fish habitat or fish populations. For example, artificial lake aeration is accomplished with compressors or pumps and can prevent fish kills caused by lack of oxygen during winter. Fertilization of lakes or streams increases food supplies for salmonids. By selectively breeding fish with desirable characteristics, stocks can be developed that can survive in adverse environments such as alkaline lakes. Here are details of projects by location of project administration.

VICTORIA

1. **ALKALINE LAKES RAINBOW TROUT**
   1992/93 - 1995/96 ⇒ $112,672

   Rainbow trout tolerant of high pH levels were used to stock alkaline lakes. The long term survival rates and acclimatization abilities of the rainbow trout were studied. (0-13)

2. **BIODIVERSITY AND SUSTAINABLE YIELDS IN FERTILIZED COASTAL MONTANE LAKES**
   1994/95 - 1995/96 ⇒ $130,654

   Twin Lake East was fertilized to increase phytoplankton and zooplankton levels, insect biomass, and fish growth. Twin Lake West was left unfertilized as a control. (0-55)

3. **EXPERIMENTAL LAKES FERTILIZATION**
   1992/93 - 1993/94 ⇒ $100,988

   Rainbow trout yields were monitored after inorganic fertilizer was applied to low productivity lakes. (0-24)

4. **PREMIER RIVER FISHERIES DEVELOPMENT**
   1994/95 - 1995/96 ⇒ $139,556

   Low-levels of fertilizer were added to Big Silver Creek and Adam River to enhance fish habitat. Data indicated that there was an increase in the biomass of benthic insects and the weight of young rainbow trout. (0-61)

5. **RAINBOW TROUT BROODSTOCKS**
   1992/93 - 1993/94 ⇒ $77,448

   The relative survival, growth and maturation rates were compared between rainbow trout strains adapted to multi-species environments and those indigenous to a monoculture. (0-10)

VANCOUVER ISLAND

6. ADAM RIVER TROPHY FISHERY

1992/93 - 1993/94 ⇒ $54,471

Low-levels of fertilizer were applied to two main tributaries of the Adam River to enhance a premier trout fishery. Water levels, temperatures and nutrients were monitored, periphyton and benthic insect samples were collected, and fish size and abundance were analyzed at both the control and treatment sections. (1-56)

7. SALMON RIVER FERTILIZATION FEASIBILITY

1992/93 - 1995/96 ⇒ $76,371

Liquid fertilizer was used to improve the growth and survival rate of juvenile steelhead trout, coho salmon, chinook, and resident rainbow trout. Evaluation of this project included instream fish and water sampling. (1-28)

8. SMALL LAKES FERTILIZATION

1992/93 - 1995/96 ⇒ $110,042

Fertilization was applied to four lakes in the Sayward Forest to increase the productivity of rainbow and cutthroat trout. (1-36)

LOWER MAINLAND

9. BIG SILVER ENRICHMENT

1993/94 ⇒ $18,239

A prototype stream enrichment program was initiated to improve growth rates of salmonid populations and enhance sport fishing opportunities. (2-139)

OKANAGAN

10. KIDD LAKE AERATION

1994/95 ⇒ $13,594

Two aerators were installed to prevent winter kill of rainbow trout due to low oxygen levels. This allowed implementation of a catch-and-release fishery. (8-108)

11. LADYKING LAKE AERATION

1992/93 - 1993/94 ⇒ $9,144

An aeration system was installed to reduce the number of overwintering mortalities of rainbow trout. This consequently enhanced fish numbers, fish size and angler use. (8-82)

12. REVIEW OF OKANAGAN LAKE LIMNOLOGY

1995/96 ⇒ $43,682

The limnology of Okanagan Lake was analyzed to ascertain its current trophic status. The impact of Mysis introduction on zooplankton and whether shore and stream spawning kokanee populations were increasing or decreasing were assessed. (0-99)

13. Nahmint Log Jam Removal

FISH PASSAGE

Upstream passage of fish to their spawning and rearing habitat is restored through selective removal of barriers such as beaver dams, log jams and minor land slides. In addition, culverts may be installed or replaced to improve access. Fishways, which consist of a small series of steps or compartments providing rest areas with reduced water velocities, allow passage over major dams and waterfalls.

VANCOUVER ISLAND

13. **NAHMINT RIVER LOG JAM REMOVAL**
1994/95 - 1995/96 ⇒ $12,468

Two log debris jams were removed using an aircrane in order to maintain steelhead trout access to spawning and rearing habitats. **FRDA** (1-101)

LOWER MAINLAND

14. **CHANTRELL CREEK**
1994/95 ⇒ $10,000

Three key migration barriers were either removed or modified to allow coho salmon and cutthroat trout access. (2-72)

THOMPSON-NICOLA

15. **BONAPARTE FISHWAY OPERATION**
1995/96 ⇒ $20,965

Steelhead and rainbow trout were monitored and enumerated through the Bonaparte River fishway, which was completed in association with the Bonaparte Indian Band. This provided information on how the 1990 flood affected brood stocks for that particular year. (3-71)

16. **THOMPSON/NICOLA STREAM IMPROVEMENT**
1992/93 - 1994/95 ⇒ $108,981

Log jams, beaver dams and other debris were removed from several rivers and creeks in the Thompson/Nicola region to allow for better salmonid access. Salmon passage was monitored by fish counts. As well, a trail, a fence and several spawning platforms were built. The fence was constructed to protect key riparian areas from cattle. (3-42)

KOOTENAY

17. **EDWARDS LAKE SPRING**
1992/93 ⇒ $4,881

Fallen trees and debris were selectively removed to provide access for migrant fish. In addition, three bridges and a viewing trail were constructed to increase recreational and educational opportunities at the site. (4-97)

18. **MACDONALD CREEK STREAM CLEARANCE**
1992/93 ⇒ $8,355

6.5 km of instream debris was removed to provide easier access for spawning fish in MacDonald Creek. **FRDA** (4-67)

19. **MAT CREEK STREAM CLEARANCE**
1992/93 ⇒ $699

Organic debris was removed to support a run of migratory bull trout. Additionally, kokanee eggs were transplanted to Lardeau River. **FRDA** (4-42)

20. **STAPLES CREEK FISH LADDER**
1993/94 - 1994/95 ⇒ $26,721

An old fish ladder on Staples Creek, a tributary to the south of Premier Lake, was replaced to provide improved rainbow trout access to upstream spawning habitat. Members of the Purcell Chapter of Trout Unlimited donated both time and money to dismantle the old fish ladder. (4-112)

21. **WILKIE CREEK**
1992/93 - 1994/95 ⇒ 4,595

A section of Wilkie Creek was cleared of fine silts to restore natural spawning gravels. Beaver dams and debris were removed to allow migration of kokanee, rainbow trout and bull trout. **FRDA** (4-53)

CARIBOO

22. **PUNTZI CREEK STREAM ENHANCEMENT**
1992/93 - 1995/96 ⇒ $80,051

Fish passages were cleared of beaver dams and debris to allow for trout access to upstream spawning habitats. Additionally, two back flood structures were replaced with fishways and a water gauge was replaced to effectively monitor flows. (5-71)

102. Small Lakes Water Conservation

OMINECA/PEACE

23. COTTONWOOD ISLAND SIDE CHANNEL REHABILITATION

1994/95 ➠ $8,264

A ground-fed channel was excavated to establish year-round habitat for fish. Also, large woody debris was removed to improve access to a side channel. (7-82)

OKANAGAN

24. COLDSTREAM CREEK FISHWAY

1994/95 ➠ $8,477

A fishway was installed to allow the passage of kokanee and rainbow trout into Coldstream Creek. (8-107)

25. FERRY CREEK CULVERT

1993/94 ➠ $5,785

A fishway and weir were constructed to allow rainbow trout access to upstream habitats in Ferry Creek. (8-89)

26. PENTICTON CREEK SPAWNING ENHANCEMENT

1993/94 ➠ $35,000

Four fish ladders were constructed to facilitate kokanee passage to two potential spawning areas. (8-99)

27. POWERS CREEK IMPROVEMENTS

1992/93 - 1993/94 ➠ $9,546

Enhancement activities included repairing the fish ladder, blasting boulders, removing rock fragments from the channel, and placing spawning gravel at platform sites below the fish ladder. (8-87)

28. SHINGLE CREEK FISHWAY

1994/95 ➠ $16,550

In conjunction with the Ministry of Environment, the Penticton Indian Band replaced a fishway and repaired the control gate structure of the dam to prevent excessive amounts of water from bypassing the fishway. (8-102)

29. VASEUX CREEK FISHWAY

1994/95 ➠ $8,762

A feasibility study was conducted to determine the cost estimates and preliminary design for construction of a fishway. As well, fish and habitat inventories were performed. (8-115)

INFORMATION AND EDUCATION

Brochures, videos, signs and displays have been produced to inform and educate the public about fish and their habitats, and to promote stewardship practices. As well, construction of viewing towers and platforms enable the public to view fish in their natural habitats.

VICTORIA

30. STEWARDSHIP MANUALS
1993/94 - 1994/95 ⇒ $30,878

A series of stream stewardship manuals were published to educate community organizations, planners and developers, private landowners and students about the importance of conserving and protecting fish habitat. (0-54)

31. LAKESHORE PROTECTION BROCHURE
1994/95 ⇒ $12,205

A stewardship brochure was developed and distributed to property owners who live around key lakes in the Vancouver Island, Cariboo and Omineca/Peace regions. This publication emphasizes the importance of conserving fish habitat. (0-89)

THOMPSON-NICOLA

32. HABITAT CONSERVATION FUND PROJECT SIGNING AND STANDARDIZATION
1992/93 ⇒ $5,581

Twenty-six signs were constructed and erected at project sites. These signs depicted one of the five types of enhancement techniques: lake aeration, stream diversion, outlet fencing, spawning platforms and lake rehabilitation. (3-47)

OPERATIONS & MAINTENANCE

Some enhancement projects require ongoing maintenance in order to remain effective. These include the maintenance and operation of aeration equipment, rehabilitation of spawning habitat, and cleaning of settling ponds.

33. O&M FISHERIES
1992/93 - 1995/96 ⇒ $637,737

Operations and maintenance projects cover a wide spectrum of activities.

A. Victoria 1995/96 ⇒ $9,661 (1-72)
B. Vancouver Island 1992/93 - 1995/96 ⇒ $73,545 (1-72)
C. Thompson/Nicola 1992/93 - 1995/96 ⇒ $72,637 (3-94)
D. Kootenay 1992/93 - 1995/96 ⇒ $178,707 (4-64)
E. Cariboo 1992/93 - 1995/96 ⇒ $86,321 (5-44)
F. Omineca/Peace 1992/93 - 1995/96 ⇒ $106,329 (7-97)
G. Okanagan 1992/93 - 1995/96 ⇒ $110,537 (8-124)

89. Cuttar Lake Gravel Platform

53. *Conservation of Fraser River White Sturgeon*

PROTECTING HABITATS

Methods used to protect fish habitats include planting vegetation and placing boulders and logs to stabilize stream banks, and erecting fences to deter cattle and people from entering sensitive habitats.

VANCOUVER ISLAND

34. BILSTON CREEK ENHANCEMENT
1993/94 - 1994/95 ⇒ $38,437

Native vegetation was planted along the riparian zone and plants were monitored to determine which species grew best. Rock rip rap was placed on the pond banks to prevent further erosion and to protect fish habitat. (1-77)

35. BINGS CREEK ENHANCEMENT
1992/93 ⇒ $15,978

A culvert and a fence were constructed to prevent cows from crossing the stream. Two instream cattle crossings were installed in order to minimize the impacts of stream bank erosion at a dairy farm. (1-44)

36. CHERRY CREEK FENCING
1992/93-1993/94 ⇒ $21,600

A fence was constructed to prevent cattle from crossing Cherry Creek. The channel was excavated to make it wider and deeper to improve year-round flow. Grass and tree seedlings were planted along the stream banks to halt erosion, to provide shade, and to improve habitat complexing. (1-60)

37. KINKADE CREEK EROSION CONTROL
1993/94 ⇒ $9,780

Erosion control techniques (e.g. vegetation planting) were carried out at two sites on Kinkade Creek after substantial amounts of fine sediment entered the creek. (1-67)

OKANAGAN

38. JOE LAKE HABITAT ENHANCEMENT
1992/93 - 1995/96 ⇒ $8,529

Surveys showed that Joe Lake has a successfully reproducing population of wild shore-spawning rainbow trout that needed protection.
A fence was constructed to restrict access of cattle, horses, and hikers, preventing any further erosion in the riparian zone. This would allow re-growth of vegetation to occur and protect the redds of shore-spawning rainbow trout. (8-122)

PLANNING/FEASIBILITY

When there is insufficient information available regarding the habitat needs of fish, sometimes planning or feasibility studies are needed to identify enhancement or conservation opportunities.

VICTORIA

39. FISHERIES PLANNING
1992/93 - 1993/94 ⇒ $150,319

A federal and provincial joint study was performed to monitor steelhead, coho and chinook stocks in the Skeena River. This study was important in designing fisheries management strategies. (0-6)

40. VULNERABLE DACE POPULATIONS OF THE SIMILKAMEEN RIVER
1992/93 ⇒ $26,959

Fieldwork was conducted to identify the habitat of adult Umatilla dace and an electrophoretic analysis helped to determine if the Similkameen River population is distinct from other rivers. These fish are classified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as vulnerable, and this study allowed for recommendations to be made on preservation of their habitat. (0-38)

41. LOGGING EFFECTS IN MOUNTAINOUS DRAINAGES
1992/93 ⇒ $2,700

Bulk river gravel samples and lake sediment core samples were collected. Ground surveys and aerial photography were performed to evaluate the impact of logging on sedimentation rates and fish spawning grounds. From the collected data, recommendations were made on the protection and enhancement of spawning grounds and wildlife habitat. (0-33)

VANCOUVER ISLAND

42. COWICHAN LAKE STORAGE FEASIBILITY
1992/93 ⇒ $6,000

This study evaluated whether the weir height in Cowichan Lake should be raised in order to maintain adequate water storage during periods of extended dry weather. (1-38)

43. NANAIMO URBAN STREAMS
1993/94 - 1994/95 ⇒ $30,015

A detailed fish habitat inventory was conducted in several streams around the city of Nanaimo. To enhance fish habitat on Cat Stream, large woody debris was introduced to increase channel complexity, riparian species were planted to create cover for fish, and off-set baffles were installed. (1-82)

44. STOLTZ'S SLIDE RESTORATION
1995/96 ⇒ $12,305

An engineering feasibility study was performed to determine the most cost-effective method of eliminating or greatly reducing fine sediment and clay particles from entering the Cowichan River at this site. (1-88)

LOWER MAINLAND

45. CONSERVATION OF FRASER RIVER WHITE STURGEON - LOWER MAINLAND
1992/93 - 1995/96 ⇒ $139,874

Areas in the lower Fraser River that provide critical habitat for juvenile and sub-adult white sturgeon, were identified and described. This information would be used for the development of management and conservation strategies for this vulnerable species. In addition, juvenile white sturgeon were tagged and their length, weight and age were recorded. (2-199)

46. COQUIHALLA RIVER RIPARIAN HABITAT
1995/96 ⇒ $13,159

The land use and status of the riparian corridor from Hope to Boston Bar was examined to design a management plan with a focus on fisheries and recreation. (2-84)

47. CRITICAL URBAN STREAMS HABITAT
1993/94 ⇒ $11,352

Small streams located in urban watersheds were examined to identify critical habitat for salmonids and to identify enhancement and restoration opportunities. (2-61)

48. ENDANGERED FISH SPECIES IN THE LOWER MAINLAND / ENDANGERED SALISH SUCKER / ENDANGERED NOOKSACK DACE

1992/93 - 1994/95 ⇒ $60,969

A management plan was devised for the protection, enhancement and maintenance of several species which are considered threatened or endangered, including the Salish sucker and brassy minnow. The distribution and habitat utilization of the Nooksack dace and Salish sucker were also analyzed. (2-62)

49. LILLOOET RIVER WILDSTOCK INVENTORY

1993/94 ⇒ $29,875

The habitat of cutthroat trout, rainbow trout, steelhead and Dolly Varden char were quantified and described to identify opportunities for habitat restoration and enhancement. (2-67)

50. SALISH SUCKER / NOOKSACK DACE

1995/96 ⇒ $2,304

Population estimates and preferred habitat were determined for the endangered Salish sucker and vulnerable Nooksack dace. (2-102)

51. WILD COASTAL CUTTHROAT TROUT

1993/94 ⇒ $29,167

Habitat assessments and fish stock analyses were conducted for wild cutthroat trout in ten small lakes in the Powell River District. This information was used to help develop habitat improvement and protection guidelines. (2-58)

52. WOODLAND STREAM COMMUNITIES

1992/93 - 1993/94 ⇒ $28,687

Eighty streams were sampled in the Coastal Western Hemlock biogeoclimatic zone to determine if there is a relationship between the community structure of a stream and its logging history. These streams were found in a variety of forest types including clear cuts and second growth stands. Benthic macroinvertebrates were sampled, water chemistry was analyzed, and sediment particle size composition was determined. FRDA (2-59)

THOMPSON-NICOLA

53. CONSERVATION OF FRASER RIVER WHITE STURGEON - THOMPSON/NICOLA

1995/96 ⇒ $75,000

White sturgeon were captured to obtain information on their distribution, abundance, age-class structure and habitat selection. Habitat reconnaissance surveys were performed to identify spawning and rearing habitats. (2-199)

54. NORTH THOMPSON RIVER FEASIBILITY AND PROJECT DEVELOPMENT

1992/93 ⇒ $54,400

Bull trout populations in the north Thompson watershed were identified. Their life history, age, growth, and spawning and rearing habitats were monitored. Logging practices at Oliver Creek and a road culvert at Chuck Creek were recognized as having potentially negative impacts on bull trout habitat. (3-195)

55. PROJECT DEVELOPMENT AND EVALUATION

1992/93 ⇒ $39,496

Approximately sixty lakes were surveyed and assessed to determine fisheries habitat problems and, as a consequence, twenty enhancement opportunities were identified. Evaluation of fish control structures installed during a prior HCF project showed that minor improvements were required. (3-50)

56. SCOTCH CREEK RAINBOW TROUT RADIO TRACKING

1994/95 - 1995/96 ⇒ $42,667

A radio tagging program for rainbow trout was conducted to determine the locations of preferred spawning habitat within Scotch Creek, the time and duration of spawning, and the age and morphology of spawning fish. (3-76)

KOOTENAY

57. WIGWAM RIVER BULL TROUT

1995/96 ⇒ $2,390

The spawning grounds of bull trout were enumerated using aerial and ground survey techniques. (4-147)

58. CONSERVATION OF COLUMBIA BASIN WHITE STURGEON

1995/96 ⇒ $125,597

Sturgeon were captured and tagged to determine movement and subsequent identification of important holding and / or spawning areas. The identification of sturgeon spawning habitat is a priority of this study.

Habitat assessments were conducted by the use of sonar to type and measure sturgeon habitat. Probable spawning areas were located through radio telemetry programs and habitat assessments. (4-129)

CARIBOO

59. BELLA COOLA CUTTHROAT ASSESSMENT

1993/94 ⇒ $20,781

Major cutthroat trout streams were surveyed to determine their use by adults and juveniles, and their habitat capability. Small scale enhancement, such as barrier removal, was carried out in conjunction with field assessment work. (5-75)

60. BRIDGE RIVER ASSESSMENT

1994/95 ⇒ $26,281

An assessment was made on natural and manmade barriers restricting the production of rainbow trout, kokanee, and salmon. Long-term enhancement projects were developed to protect habitats. (5-76)

SKEENA

61. BULKLEY RIVER STEELHEAD MARK RECAPTURE ESTIMATION

1994/95 ⇒ $2,671

Over 200 steelhead were fitted with radio transmitters in a conservation effort to obtain accurate fish counts. The radio tagging information was used to estimate population sizes for the various tributaries of the Skeena watershed. (6-54)

62. BURNS LAKE RAINBOW TROUT SAMPLING

1993/94 ⇒ $11,006

Ten lakes were surveyed to identify rainbow trout spawning sites for potential future enhancement projects. The quantity of spawning substrates was assessed and compared to required amounts. Potential problems were identified that may reduce rainbow trout recruitment. (6-40)

63. GIANT PYGMY WHITEFISH

1995/96 ⇒ $18,000

DNA from giant pygmy whitefish in Tyhee Lake was compared with "ordinary" pygmy whitefish from Touhy, Tacheeda, and Cluculz Lakes. An analysis was performed to determine whether the two fish types were genetically distinct from each other, or whether their size difference was a result of environmental conditions. Also, morphological and ecological studies were conducted on the Tyhee Lake giant pygmy whitefish. (6-62)

64. HATCHERY STEELHEAD SAMPLING

1992/93 - 1993/94 ⇒ $39,108

Port sampling of commercial fishery catches was increased to enlarge marked steelhead sample sizes. Additionally, the run timing database was improved. (6-39)

65. SKEENA RADIO TELEMETRY

1994/95 - 1995/96 ⇒ $251,682

Skeena River steelhead and adult coho salmon were radio tagged to monitor their migration patterns to natural spawning grounds. (6-58)

66. SKEENA RIVER WEIR OPERATIONS

1994/95 - 1995/96 ⇒ $170,784

The Upper Sustut stock was enumerated using a combination of fish fences and snorkel surveys in the Sustut River, Babine River, and Toboggan Creek. (6-59)

67. SUSTUT RIVER SPAWNING

1993/94 ⇒ $25,250

An assessment was conducted to determine the abundance and distribution of steelhead spawning in the upper Sustut River. A proportion of these fish were radio-tagged to identify steelhead spawning sites and understand steelhead use of this index stream. (6-50)

68. TAKU RIVER STEELHEAD TELEMETRY

1992/93 ⇒ $11,835

Fifty radio transmitters were purchased and used to identify the movements and spawning locations of steelhead. This information will be particularly valuable because steelhead returning to the Taku watershed are often intercepted by commercial sockeye salmon runs. (6-44)

69. UPPER SKEENA STEELHEAD

1992/93 - 1993/94 ⇒ $158,488

The abundance and distribution of juvenile steelhead were assessed in the Sustut, Morice, Zymoetz and Kitwanga Rivers. The migration and holding patterns of adult steelhead were determined, an analysis of nutrients from water samples was performed, and counts of steelhead in the early component of the Sustut River run were studied. (6-45)

70. UPPER SUSTUT STEELHEAD

1993/94 - 1994/95 ⇒ $41,021

The Upper Sustut River steelhead stock was enumerated using snorkeling counts, aerial surveys, and migration fences along Sustut River and Johanson Creek. (6-52)

OMINECA/PEACE

71. CONSERVATION OF FRASER RIVER WHITE STURGEON

1995/96 ⇒ $176,610

White sturgeon were tagged with both a Floy tag and passive integrated transponder (PIT) tag. Biological samples were collected and the sturgeons' length, girth, snout length, weight and condition were tabulated. Habitat characteristics recorded at the sampling sites included channel morphology, vegetative cover, aquatic macrophytes, and global positioning system (GPS) position. Additionally, sturgeon overwintering, spring feeding and spawning movements were studied. (0-110)

72. ENDAKO RIVER RAINBOW TROUT TAGGING

1993/94 ⇒ $27,965

Adult and juvenile rainbow trout were tagged to identify the distribution of trout using the Endako River for spawning and rearing. Adult rainbow trout were enumerated using a counting fence. (7-56)

73. PRINCE GEORGE RAINBOW TROUT STREAMS

1994/95 ⇒ $8,745

A fish inventory of McMillan Creek was conducted which focused on quantifying spawning and rearing habitat and population sizes. The report also included six recommendations for creek enhancement. (7-89)

74. SALMON RIVER HABITAT ANALYSIS

1992/93 ⇒ $5,658

The size and age of chinook salmon, rainbow trout and mountain whitefish were determined from eight sample areas. As well, the lengths of other fish were measured including squawfish, brassy minnow, dace, and sucker. Habitat suitability for the fry, parr and adult stages of the target species were also identified, which will be beneficial in directing future enhancement activities. (7-62)

OKANAGAN

75. SANDNER PROPERTY WILDLIFE MANAGEMENT AREA

1994/95 ⇒ $1,850

A wildlife management plan was prepared for the creation of a wildlife management area benefitting a variety of fish and wildlife species. (8-100)

76. OKANAGAN SHORE-SPAWNING KOKANEE

1995/96 ⇒ $4,000

The movements, spawning behaviour, and substrate preferences of individual shore-spawning kokanee were studied to improve both enumeration and enhancement techniques for this unique stock. (8-97)

56. Cherry Creek

82. Ida Lake Outlet Gravel Placement

SPAWNING AND REARING HABITAT IMPROVEMENTS

Spawning habitats for salmonids are restored by cleaning, loosening, depositing or replacing gravel where natural gravel has become buried or washed away. Spawning habitat is also created by constructing new channels adjacent to existing streams and providing them with suitable gravel and controlled water flow.

VICTORIA

77. GUIDE FOR THE INSTALLATION OF INSTREAM STRUCTURES
1993/94 - 1994/95 ⇒ $29,071

Guidelines were developed incorporating stream stability indicators and fish habitat improvement structure design criteria. These guidelines are to be used for protective, mitigative or restorative measures required for stream corridor management. FRDA (0-47)

VANCOUVER ISLAND

78. BIG QUALICUM RIVER HABITAT COMPLEXING
1994/95 ⇒ $14,745

Floating log covers, submerged log covers, debris catchers and boulder clusters were placed in Big Qualicum River to increase habitat complexity. These structures were placed approximately 1.5 km upstream of a chum spawning channel and act as an artificially complex rearing habitat for juvenile steelhead and coho. (1-76)

79. CAMPBELL RIVER SIDE CHANNEL ENHANCEMENT
1992/93 ⇒ $50,052

A side channel was constructed to accommodate spawning chinook, steelhead, coho and cutthroat trout.(1-58)

80. COMOX VALLEY STREAMS
1992/93 - 1994/95 ⇒ $47,297

The fish rearing habitat for cutthroat trout and coho salmon in Morrison Creek was enhanced by placing logs and boulders to provide cover and by placing additional gravel. Stream banks were protected through the introduction of rocks and large organic debris (LOD). (1-62)

81. COWICHAN RIVER CHANNEL MAINTENANCE
1992/93 ⇒ $20,000

A spawning side channel was repaired after it sustained damage from a storm in 1990. (1-64)

82. IDA LAKE OUTLET GRAVEL PLACEMENT
1994/95 ⇒ $9,500

Fifty cubic metres of screened and washed gravel were placed at the Ida Lake outlet to increase summer steelhead and resident trout spawning habitat. (1-98)

83. LINNAEA CREEK ENHANCEMENT
1993/94 ⇒ $11,298

Large organic debris (LOD) and boulders were placed at selected locations in Linnaea Creek to create holding and rearing areas. Spawning gravel was added and riparian vegetation was planted to enhance fish habitat. (1-68)

84. SMALL LAKES TRIBUTARY IMPROVEMENT

1992/93 - 1993/94 ⇒ $10,292

Enhancement activities at O'Donnell Creek and Duck Creek included installation of woody debris structures to promote scouring in the channel and provide cover. At O'Donnell Creek the stream channel was excavated in a section impacted by cattle watering, and shot rock was installed in the stream where erosion control was required. At Duck Creek, several zones of the upper creek were re-channeled, spawning gravel was introduced, and vegetation was planted along the side of the stream. (1-70)

85. SPROAT LAKE GRAVEL PLACEMENT

1994/95 ⇒ $8,000

A gravel spawning platform was created that is capable of supporting up to 64 pairs of adult steelhead trout. (1-87)

LOWER MAINLAND

86. COQUITLAM RIVER HABITAT DEVELOPMENT

1993/94 ⇒ $15,844

Wing deflectors were placed on opposite banks to constrict the channel and increase water velocity to encourage bed scouring. This created two holding and rearing pools. (2-60)

THOMPSON-NICOLA

87. NICOLA VALLEY EDUCATION AND ENHANCEMENT PROJECT

1992/93 - 1994/95 ⇒ $112,435

Ditch irrigation systems were screened to prevent excessive withdrawal of water and loss of downstream migrating juvenile salmonids which get trapped in the ditch after they leave the stream. Side channels were also constructed and one was expanded due to its success as a rearing area. Rip-rap was placed inside and outside of the channel to protect the waterway from high water wash outs. Vegetation was planted to stabilize the banks, and rootwads were placed in the channel to act as a cover. (3-40)

KOOTENAY

88. BRIDGE CREEK SPAWNING CHANNEL

1993/94 ⇒ $15,369

An enumeration fence was constructed at the entrance of the spawning channel to determine adult escapement figures and subsequent fry production. (4-38)

89. CONNOR LAKE GRAVEL PLATFORM

1993/94 ⇒ $2,923

Four spawning platforms were created which provided 6 m^2 of spawning substrate to increase the natural recruitment of cutthroat trout. (4-107)

90. MILL CREEK GRAVEL PLACEMENT

1992/93 ⇒ $418

Gravel was placed in different locations along Mill Creek creating 30 to 40 spawning areas for kokanee. (4-100)

91. MURPHY CREEK SPAWNING CHANNEL

1993/94 ⇒ $2,250

Spawning habitat for rainbow trout was increased by creating a spawning channel. (4-111)

92. OUTLET CREEK GRAVEL SCARIFICATION

1992/93 ⇒ $4,832

Spawning gravel was cleaned after large silt deposits caused the substrate to become heavily compacted. (4-102)

93. ST. MARY RIVER HABITAT

1992/93 - 1993/94 ⇒ $7,560

Debris collectors were placed at various sites to create cover. Local velocity shears and variations in depth provide habitat for trout rearing. The debris trap is formed from two floating logs which are anchored to the river bed. During flooding conditions debris accumulates within the structure. (4-88)

CARIBOO

94. SHERIDAN LAKE EGG RELEASING CHANNELS

1992/93 - 1993/94 ⇒ $18,585

A spawning channel was constructed, and its performance was evaluated to determine the spawning success of trout using the channel. (5-74)

OMINECA/PEACE

95. ST. GEORGE CREEK ENHANCEMENT

1992/93 & 1994/95 ⇒ $14,250

Fish traps were installed to determine the number of rainbow trout spawning in the creek. This information was used to evaluate the effectiveness of the fish weirs and reverse gravel platforms that had been installed a few years previously. (7-64)

96. INGA LAKE TROUT SPAWNING CHANNEL

1993/94 - 1994/95 ⇒ $47,595

An artificial spawning channel was constructed to reduce the number of spawnbound fish within the lake and the number of mature fish passing over the lake's dike. There are hopes this will help curtail the white sucker population. (7-57)

97. PINE RIVER HABITAT ENHANCEMENT

1993/94 - 1994/95 ⇒ $51,249

Large organic debris (LOD) structures, rail debris catchers and rock weirs were installed to create additional fish habitat. (7-53)

OKANAGAN

98. MISSION CREEK SPAWNING CHANNEL REBUILD & AWARENESS PROGRAM

1992/93 - 1994/95 ⇒ $109,325

A public education program was conducted by students from Okanagan University College. (0-59)

WATER CONTROL

To ensure optimal conditions for fish year round, it is sometimes necessary to control water levels with dams, culverts and diversions. Other possible activities may include evaluating water licenses and water withdrawals from streams, and developing alternate water use strategies to ensure an adequate quantity of water for fish survival.

VICTORIA

99. CONSERVATION OF INSTREAM FISHERIES

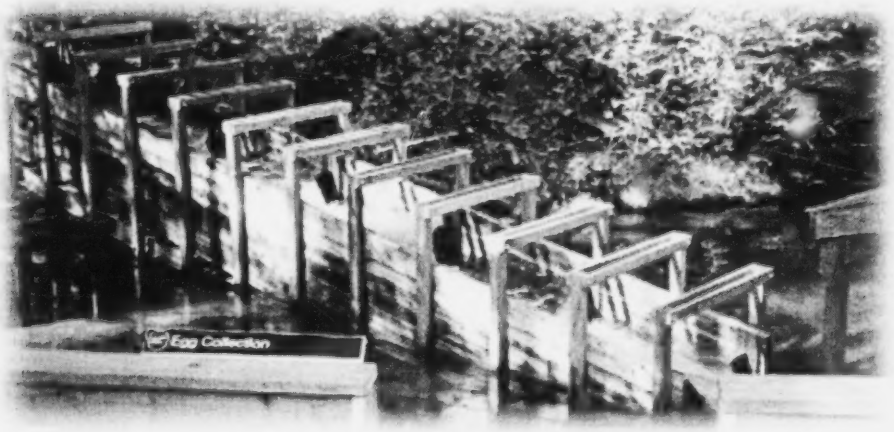
1995/96 ⇒ $25,706

Water releases at the Cheakamus power plant were monitored to determine how this would affect the production of steelhead and cutthroat trout in spawning and rearing streams. (0-76)

100. SANDHILL STREAMFLOW IMPROVEMENT

1992/93 & 1994/95 ⇒ $89,732

A pumping station was installed to maintain adequate summer water flow, enhancing the survival and abundance of juvenile cutthroat trout. (0-36)



20. Staples Creek Fish Ladder

VANCOUVER ISLAND

101. KNARSTON CREEK STORAGE DAM

1994/95 ⇒ $10,000

A storage dam was built for flow release during the summer and autumn months to ensure that a minimum water level is maintained for the salmonid population. (1-99)

LOWER MAINLAND

102. ERICKSON CREEK

1992/93 ⇒ $4,950

An Archimedean screw pump was installed to reduce salmonid smolt mortality. (2-33)

103. SEYMOUR DEMO FOREST

1994/95 ⇒ $12,000

Water was diverted from Junior Creek to Seymour River to increase year-round flow which could create an additional 3500 m^2 of new fish habitat. (2-79)

104. LADNER MARSH TIDAL FLUSHING

1992/93 ⇒ $9,797

To return tidal flushing between Deas and Ladner Sloughs a new culvert and ditch system were installed under Ferry Road to increase habitat diversity for fish and wildlife. (2-51)

THOMPSON-NICOLA

105. BONAPARTE DAM - HABITAT AND FLOW VERIFICATION

1992/93 - 1994/95 ⇒ $213,873

Steelhead and rainbow trout migrating in and out of Bonaparte Lake were enumerated and biological data such as length, weight and scale samples were collected. Stream level and flow measurements were recorded to calculate a rating curve. (3-52)

106. SALMON RIVER DIVERSION

1992/93 & 1994/95 ⇒ $36,754

A river diversion was reconstructed to increase the water supply to Salmon Lake and help reduce summer and winter fish kills. Rip-rap was placed to help stabilize the banks. (3-59)

107. SMALL LAKES WATER CONSERVATION

1994/95 & 1995/96 ⇒ $130,675

This project was initiated to determine whether impacts from irrigation withdrawals could be reduced to prevent winterkill, summerkill and loss of habitat in several small lakes near Kamloops. Fourteen lakes were targeted and information collected to determine the feasibility of alternatives to lake drawdown. Storage sites at Tunkwa and Leighton Lakes were completed to provide additional water releases during critical periods to prevent summer and winter kill of rainbow trout in that important system. (3-78)

CARIBOO

108. DILLABOUGH CREEK RAINBOW TROUT SPAWNING

1992/93 ⇒ $11,664

A 40 metre saddle dam was constructed on Nikwit Lake to prevent wasted outflow during periods of high water levels. Additionally, a v-notch control was installed at the outlet of Nikwit Lake to moderate spring run-off and maintain flows throughout the summer months. (5-48)

109. LITTLE LAGOON CREEK DIVERSION

1994/95 ⇒ $9,800

Little Lagoon Creek was rediverted back into its original channel rather than having its flow directed into Chilko Lake. This created an additional three kilometres of spawning and rearing habitat for salmon, steelhead & trout. (5-78)

110. TÊTE ANGELA DIVERSION

1994/95 - 1995/96 ⇒ $159,243

A ditch was constructed to manage water flows, preventing damage to agricultural land. As well, the diversion structure was upgraded to increase water flows from the Tête Angela system to the Haines system in order to maintain a very productive series of lakes as rainbow trout habitat. (5-62)

SKEENA

111. NITHI RIVER EXCAVATION / FLOW IMPROVEMENT

1992/93 - 1993/94 ➪ $16,593

Sections of Nithi River periodically dry up, resulting in the loss of juvenile fish. In order to determine whether dam construction was necessary, proponents monitored surface and sub-surface water depths in three vertically placed culverts, and the gravel filling rates in an excavated area. (6-74)

OMINECA/PEACE

112. FINGER CREEK FLOW CONTROL

1994/95 - 1995/96 ➪ $1,862

A water control structure and spillway on the inlet of Finger Creek were constructed to provide adequate water levels in the fall for spawning kokanee. Gravel was placed to improve spawning habitat for kokanee. (7-86)

38. Joe Lake Habitat Enhancement

113. STEWART LAKE WEIR

1993/94 - 1995/96 ➪ $63,022

In addition to the outlet weir being raised, a spillway was installed to prevent winter fish kill and restore water levels. A debris boom was also built to prevent damage to the spillway. (7-79)

OKANAGAN

114. BURNELL LAKE WATER DIVERSION

1993/94 ➪ $14,966

Water was diverted to Burnell Lake to provide sufficient flows to increase the lake's productive potential. Adequate flushing of concentrated nutrients prevents fish kills. (8-78)

115. CHAIN LAKE WATER QUALITY

1992/93 ➪ $20,000

Poor quality water from the bottom of Chain Lake was siphoned to improve overall water quality and reduce algae blooms. (8-79)

116. KIDD LAKE WETLANDS

1993/94 ➪ $26,000

The existing lowhead dam was replaced by a steel weir which provided desirable water levels. This promoted the development of aquatic vegetation for wetland wildlife, lessened the number of winter kills of rainbow trout and provided additional feeding areas. (8-92)

117. SAUNIER LAKE DAM CONSTRUCTION

1993/94 - 1994/95 ➪ $13,493

A site reconnaissance, hydrology study and cost estimate were performed to determine whether the re-establishment of an earth-filled dam would increase the area of the littoral zone and subsequently increase fish production. (8-101)

191 Marion Habitat Evaluation

WILDLIFE

The following is a list of wildlife enhancement projects funded by the Habitat Conservation Fund for the period of this review.

ECOSYSTEM INTEGRITY AND MANAGEMENT

Enhancement, protection, or rehabilitation of whole ecosystems, or habitat elements, is achieved through projects such as conservation strategies for species and private land stewardship programs. Some of these projects promote resource management techniques that favour ecological integrity.

VICTORIA

118. HABITAT SECUREMENT PROGRAM
1995/96 ➠ $38,286

This ongoing project is designed to maximize imminent wildlife habitat land securement opportunities and prioritize provincial Wildlife Management proposals for designation. In 1995-96, the program successfully focused on seeking WMA status for Boundary Bay. Securement of specific sites through land exchanges was pursued for transfers in the Cottonwood – Nazko area. The transfer of 22 hectares of Surrey Intermodal lands from CN Railways to the Crown, via a lease to The Nature Trust, was also completed. (0-88)

119. WILDLIFE MANAGEMENT AREAS PROGRAM
1994/95 ➠ $30,000

This project created information packages and submissions proposing the designation of five Wildlife Management Areas (WMA'S) in the Lower Mainland, Vancouver Island and Queen Charlotte Islands. (0-69)

120. THE STEWARDSHIP PLEDGE
1994/95 – 1995/96 ➠ $139,716

In partnership with Wildlife Habitat Canada, Environment Canada and the Ministry of Environment, Lands and Parks, this project provided co-ordination of emerging voluntary private land initiatives in the province. An important booklet "Stewardship Options" was produced and distributed to stewardship groups. As well, an Advisory Committee created Naturescape British Columbia to promote voluntary private land stewardship in the urban landscape. Three Naturescape Booklets were published – a provincial guide, and two with specific information about the Georgia Basin. (0-66)

VANCOUVER ISLAND

121. GARRY OAK HABITAT STUDIES
1994/95 ➠ $20,000

The plant ecology and habitats of the threatened Garry oak plant communities were identified and described. This information was used to develop management strategies for the preservation and conservation of BC's only native oak tree. (1-94)

THOMPSON-NICOLA

122. RIPARIAN ENHANCEMENT

1992/93 - 1995/96 ⇒ $133,323

Four exclosures were constructed in grassland riparian habitats around Hamilton Commonage to prevent further damage to the plant communities by grazing cattle. These plant communities are important sites to several species of birds, coyotes and foxes.

In addition, pre-treatment inventories for small mammals, lizards, amphibians, birds and vegetation were performed at Hamilton Commonage and Lac du Bois. FRDA (3-58)

KOOTENAY

123. BIG RANCH ELK HABITAT

1992/93 ⇒ $7,975

Habitat was enhanced by planting trees for thermal cover and shelter, fencing the property perimeter to prevent uncontrolled livestock grazing, and controlled burning to increase forage for elk, deer and moose. (4-93)

124. COLUMBIA LAKE WEST HABITAT

1992/93 ⇒ $16,700

Enhancement activities in this area included reconstructing fences, planting 2000 Douglas-fir seedlings, conducting a habitat inventory, and planning for the rehabilitation of roads and trails. (4-57)

125. ROCKY MOUNTAIN BIGHORN SHEEP

1992/93 - 1995/96 ⇒ $113,283

Critical winter habitat for sheep was improved by minimizing livestock grazing and using prescribed fires, weed control, and native grass seeding. Additionally, wild sheep were translocated from herds that were over their winter carrying capacity. FRDA (4-104)

CARIBOO

126. RIPARIAN RANGE HABITAT RECOVERY

1994/95 ⇒ $9,939

Cattle-proof exclosures were constructed in riparian habitats to prevent further damage caused by livestock activity in the Lower Chilcotin/Fraser grasslands. A reconnaissance inventory was also performed. This is the largest riparian exclosure in the province. FRDA (5-84)

OMINECA/PEACE

127. PREDATOR SHIELDS

1995/96 ⇒ $1,733

Fifteen hundred predator shields were constructed for bluebird boxes. These shields were available to the public to help reduce bluebird predation by red squirrels. (7-102)

OKANAGAN

128. HABITAT PLUS

1995/96 ⇒ $45,000

A landowner contact process was developed to provide information concerning stewardship and conservation projects and a newsletter was created for interested individuals and organizations. Eighty-one hectares of shrub-steppe habitat were seeded with native plants after a fire occurred. Additionally, a weed control program was carried out on 3.6 ha, and a fence was constructed to protect 81 ha of key dryland habitat. (8-90)

129. OKANAGAN ENDANGERED SPACES: ENHANCEMENT

1992/93 - 1995/96 ⇒ $89,554

Fencing was completed to protect critical habitats of red and blue-listed species from off-road vehicles and to regulate cattle grazing. Information brochures describing wildlife at risk were also published. FRDA (8-94)

130. OKANAGAN ENDANGERED SPACES: MAPPING

1993/94 - 1995/96 ⇒ $50,202

Biophysical capability maps for threatened and endangered species in the South Okanagan were produced to quantify habitat values. This information was valuable in developing a long-term strategy for maintenance and enhancement of this unique area. FRDA (8-95)

131. OKANAGAN ENDANGERED SPACES: PLANNING

1993/94 - 1995/96 ⇒ $21,127

The composition of weed species was determined and control strategies were recommended. As well, rare invertebrates were collected and identified to aid in designing refined sampling techniques. FRDA (8-96)

Fig. North Peace Burning

PRESCRIBED FIRE

Prescribed fires in spring or fall increase forage productivity for ungulates and other wildlife. Fire reconditions the range by removing older, less productive forage and releasing nutrients into the soil resulting in lush vegetation. These fires also maintain, create or improve important grassland habitats.

VICTORIA

132. FIRE MOP-UP

1992/93 - 1993/94 & 1995/96 ➾ $120,856

Pre-burn preparation and post-burn clean-up activities were conducted for prescribed fires associated with the Habitat Conservation Fund. Burns were conducted in the Thompson/Nicola, Cariboo/Chilcotin, Peace/Liard and Skeena regions. The Guide Outfitters Association of British Columbia (GOABC) was the delivery agent in the latter two regions. FRDA (0-1)

THOMPSON-NICOLA

133. BIG BAR WILDLIFE BURN

1995/96 ➾ $2,996

Approximately 400 hectares were burned in the Bunchgrass and Interior Douglas-Fir biogeoclimatic zones. This fire was prescribed to increase foraging areas for California bighorn sheep and mule deer by reducing coniferous understory and canopy closure. (3-85)

KOOTENAY

134. THORALD CREEK PRESCRIBED BURN

1993/94 ➾ $6,046

A prescribed fire was conducted on mule deer, elk and moose range to improve their foraging habitat. FRDA (4-92)

135. WEST KOOTENAY UNGULATES

1992/93 - 1995/96 ➾ $38,081

Prescribed fires were conducted to increase the size and quality of foraging sites, and to improve forage availability. As well, potential sites for future prescription burns were identified, mapped and prioritized according to wildlife values and concerns. FRDA (4-12)

136. ESTELLA MOUNTAIN FIRES

1992/93 ⇒ $293

A proposed prescribed burn on 70 hectares of critical Rocky Mountain bighorn sheep and mule deer winter range was attempted. Poor weather precluded a successful treatment. (4-62)

CARIBOO

137. CARIBOO WILDLIFE BURNS

1992/93 - 1994/95 ⇒ $6,450

Prescribed burns and post-burn monitoring surveys were performed at two locations in the Cariboo region to enhance California bighorn sheep range. FRDA (5-29)

SKEENA

138. NORTHWEST (NORTHERN) WILDLIFE BURNS

1992/93 - 1993/94 ⇒ $8,495

Over 1,000 hectares were burned to enhance Thinhorn sheep habitat in Northwestern BC. This also created habitat for deer, moose, mountain goats, and bears. FRDA (6-31)

OMINECA/PEACE

139. OMINECA WILDLIFE LANDS

1992/93 ⇒ $19,959

Management plans were developed for Crown lands in the Robson Valley, the Vanderhoof area, and the Cranberry Marsh Wildlife Sanctuary. These lands are held under reserve for fish and wildlife. These plans identified opportunities for habitat management or enhancement. FRDA (7-60)

140. NORTH PEACE BURNING

1992/93 - 1995/96 ⇒ $84,466

Prescription burning was utilized as an enhancement technique to improve critical ungulate range in the Fort St. John Forest District. FRDA (7-12)

141. SOUTH PEACE BURNING

1992/93 - 1995/96 ⇒ $62,590

Prescription burning was utilized as an enhancement technique to improve important range for elk, moose and mule deer in the Dawson Creek Forest District. Extensive vegetation monitoring was conducted on the sites. FRDA (7-12)

142. BISON RANGE ENHANCEMENT

1993/94 ⇒ $6,237

Prescribed fires were used to reduce the barriers to bison use. These fires enhanced revegetated sites adjacent to areas where intensive grazing by horses and bison have created range use conflicts. FRDA (7-68)

143. CASSIAR BURNING

1995/96 ⇒ $3,327

An on-site evaluation was completed to develop a five-year plan which will incorporate a landscape diversity model to improve species diversity through the use of prescribed burning. FRDA (7-92)

OKANAGAN

144. PENTICTON BURNING

1994/95 ⇒ $8,625

A five-year burn plan for the enhancement of wildlife habitats in the Penticton Forest District was completed. (8-110)

[illegible] Creek Forestry Incentive

INFORMATION AND EDUCATION

Brochures, videos, interpretive signs, wildlife viewing towers and displays have been produced to help inform and educate the public about fish and their habitat and to promote stewardship practices.

VICTORIA

145. BIRDS OF BC

1995/96 ⇒ $29,668

Distribution breeding maps for songbirds were prepared for Volume III of The Birds of BC. (0-75)

146. GREENWAY IMPLEMENTATION MANUAL

1995/96 ⇒ $17,944

Custom aerial photographs of the pilot area were taken and technical workshops were held to test draft materials. The manual is a learning tool to encourage municipalities to create green linear spaces and protect key areas of fish and wildlife habitat. (0-82)

147. FRASER RIVER LOWLANDS LANDOWNER CONTACT

1995/96 ⇒ $18,000

Through the Federation of British Columbia Naturalists this pilot project raised awareness about the biological diversity of the areas from Langley to Chilliwack. Members worked with local naturalist groups to develop a community-based approach to voluntary private land stewardship. This approach included the production of local ecological information, landowner contact, to lead to the development of management agreements and conservation convenants. (2-125)

148. WILD BC

1993/94 – 1995/96 ⇒ $182,827

Wild BC provides an impressive family of environmental education programs and resource materials for a number of provincial and federal government agencies and other organizations in British Columbia. Wild BC delivers high quality workshops, special events and environmental education resources to educators province-wide. During its first three years Wild BC has co-ordinated 190 workshops with 3,550 participants attending. (0-51)

THOMPSON-NICOLA

149. GRASSLAND RESOURCE USERS HANDBOOK

1993/94 - 1994/95 ⇒ $26,925

A handbook was developed for a target audience consisting of ranchers, managers and recreationalists. This material encourages proper management of grasslands in a manner that will mutually benefit the grassland habitat value and grassland resource users. ⓒ FRDA (3-54)

150. WESTERN GREBE FESTIVAL

1994/95 ⇒ $3,483

In Salmon Arm, a wildlife viewing festival was created which highlighted the Western Grebe's mating ritual. (3-82)

KOOTENAY

151. WEST KOOTENAY BADGER

1994/95 - 1995/96 ⇒ $18,690

An educational pamphlet was published for the purpose of increasing public appreciation and understanding of the badger and its habitat. Habitats for badgers and their preferred prey (Columbian ground squirrel and yellow-bellied marmot) were identified. (4-119)

SKEENA

152. BACK FORTY WILDLIFE VIDEO

1992/93 - 1995/96 ⇒ $11,670

A draft video was produced to inform private land owners of how they can improve or enhance habitat for wildlife on their property. (6-28)

OMINECA/PEACE

153. PHOTOGRAPHIC AID TO LICHEN ASSESSMENT

1992/93 ⇒ $1,350

Photographs of trees bearing forage lichens for caribou were taken in an Engelmann spruce-subalpine fir stand. The resulting photographs of trees with associated lichen biomass values were used in the production of a draft field manual for quantifying the abundance of arboreal lichens available to the caribou. (7-52)

OPERATIONS & MAINTENANCE

Some wildlife projects incur additional land management costs for ongoing maintenance. These funds may be required for purposes such as weed control, fencing and site rehabilitation.

154. O&M WILDLIFE

1992/93 - 1995/96 ⇒ $67,092

Operations and maintenance projects cover a wide spectrum of activities.

Lower Mainland 1992/93 - 1995/96 ⇒ $50,092 (2-97)
Kootenay 1992/93 - 1995/96 ⇒ $10,000 (4-223)
Omineca/Peace 1992/93 ⇒ $7,000 (7-139)

PLANNING/FEASIBILITY

Sometimes planning or feasibility studies are needed to identify enhancement or conservation opportunities. These activities provide data on population densities, ecosystem capabilities or habitat use patterns, supplying information needed to identify habitat requirements of wildlife.

VICTORIA

155. COASTAL WATERBIRD INVENTORY FILE

1993/94 ⇒ $6,700

The waterbird population inventory was entered into a database which would provide greater accessibility and enable individuals to update a file when new survey data are acquired. (0-41)

156. HABITAT CONSERVATION FUND ENHANCEMENT MONITORING PROGRAM

1992/93 - 1995/96 ⇒ $114,225

A long-term enhancement monitoring program was established to assess how effective previous Habitat Conservation Fund projects have been. For example, a survey count of bird species at twelve different sites in the Delkatla area was conducted to determine how wildlife communities were affected after the removal of a causeway. Also, the response of waterfowl to a number of water control techniques was studied and vegetation was monitored after a prescribed fire. FRDA (0-31)

157. HABITAT MONITORING DATABASE

1994/95 - 1995/96 ⇒ $2,610

The application to the Ministry Powerhouse standards was upgraded, and a training course for users of the habitat monitoring database was developed. FRDA (0-58)

158. MARBLED MURRELET HABITAT ASSESSMENT

1992/93 - 1995/96 ⇒ $70,919

The Marbled Murrelet, a threatened species, was monitored in a variety of forest types. An analysis of their behaviour aids us in understanding their use of habitat and their nesting requirements. FRDA (0-34)

159. MONITORING CHANGES IN WILDLIFE DIVERSITY

1992/93 - 1995/96 ⇒ $25,678

Bird and mammal surveys were conducted before and after harvesting. This was done to determine if there is a correlation between changes in wildlife diversity and changes in forest structure associated with such silvicultural methods as aspen clearcutting and partial stand cutting. FRDA (0-35)

160. STATUS OF BUTTERFLIES OF CONSERVATION CONCERN IN THE GEORGIA DEPRESSION ECOREGION

1995/96 ⇒ $43,562

Eleven taxa of butterflies that are considered to be rare or endangered were surveyed. (0-101)

VANCOUVER ISLAND

161. BALD EAGLE PROTECTION FROM POWER LINES

1994/95 ⇒ $14,735

Ground surveys were conducted to assess the use of power lines by bald eagles. Management recommendations were developed to decrease the number of mortalities caused by electrocution. FRDA (1-75)

162. COASTAL MOUNTAIN GOAT

1993/94 - 1995/96 ⇒ $47,513

Coastal mountain goat group composition, habitat requirements, and birthing areas were studied using radio-collar tracking. These data were used to formulate guidelines for the management of coastal mountain goats. FRDA (1-78)

163. COASTAL NORTHERN GOSHAWKS

1995/96 - 1994/95 ⇒ $29,027

Two survey techniques were utilized to estimate goshawk population size. Additional data were collected to determine nest site selection, nesting productivity and diet composition of the goshawk in three types of forest types. **FRDA** (1-92)

164. EAST VANCOUVER ISLAND WETLAND INVENTORY

1992/93 - 1995/96 ⇒ $155,189

An inventory of all natural remaining wetlands located between Campbell River and Sooke was established using air photo interpretation, field data collection and local input. This information was plotted on maps and will be beneficial in prioritizing the protection and acquisition of wetlands. (1-42)

165. FOREST AMPHIBIANS

1994/95 ⇒ $6,500

To determine habitat utilization by forest salamanders, a survey was completed in the Nanaimo River watershed using a new non-destructive sampling technique. (1-93)

166. GEORGIA STRAIT EAGLE NEST SITE

1994/95 -1995/96 ⇒ $38,903

Approximately 75 bald eagle nest trees covering 100 km of coastal habitat were individually inventoried and plotted on a map. Nest site conservation plans were provided to all levels of government, property owners and the public. (1-95)

167. GOLDEN EAGLE

1994/95 ⇒ $11,935

Radiotelemetry was used to locate active golden eagle nesting sites in an area of known marmot colonies to document prey selection. (1-96)

168. HORNBY ISLAND OPOSSUM CONTROL

1992/93 & 1994/95 - 1995/96 ⇒ $50,110

Opossums are an introduced species and a management strategy was developed to control them. This benefits indigenous species such as reptiles, amphibians and nesting birds which have not adapted effective strategies to cope with the predatory and scavenging behaviour of the opossum. (1-66)

169. NIMPKISH BLACK BEAR STUDY

1992/93 - 1995/96 ⇒ $30,332

Black bears were radio-collared to monitor their movements and habitat requirements. Particular emphasis was placed on locating and characterizing den sites to determine the impacts of harvesting. **FRDA** (1-69)

170. NIMPKISH BREEDING BIRD STUDY

1993/94 - 1994/95 ⇒ $30,000

Surveys of breeding birds were performed in north central Vancouver Island to determine each species' habitat requirements. This is beneficial for making effective wildlife management decisions. **FRDA** (1-83)

171. NORTHWEST BAY COUGAR

1994/95 ⇒ $7,543

Cougars were radio-collared to determine the effects of forestry practices on their habitat use. The relationship between deer and cougar habitat use was also analyzed. **FRDA** (1-102)

172. ROOSEVELT ELK HABITAT MODELS

1994/95 ⇒ $2,490

Three seasonal models were used to test the validity of predicting habitat value for Roosevelt elk. **FRDA** (1-86)

173. VANCOUVER ISLAND MARMOTS

1992/93 - 1995/96 ⇒ $37,793

Marmots were monitored using mark-recapture and radio-tracking methods. This was done to determine how logging practices affect marmot dispersal, rate of survival, and thermoregulation during summer and winter. **FRDA** (1-73)

174. VANCOUVER ISLAND WOLVERINE

1992/93 ⇒ $2,781

Within the specific study range, the distribution, estimated population size, and habitat use of wolverine were determined. **FRDA** (1-73)

LOWER MAINLAND

175. GREATER SANDHILL CRANE RECOVERY

1993/94 - 1994/95 ⇒ $41,200

Sandhill cranes were surveyed to make future management recommendations. Data collected included population status, number of nesting pairs, reproductive success and habitat requirements. (2-50)

176. POPULATION PERSISTENCE OF THE PACIFIC GIANT SALAMANDER IN THE FACE OF LAND-USE ALTERATIONS

1994/95 -1995/96 ⇒ $82,220

Mark-recapture and radio telemetry techniques were employed to determine population size of Pacific giant salamanders. Movement patterns were investigated in a series of streams to evaluate the impacts of logging operations. As well, the tailed frog was surveyed, which is also considered to be a threatened species. (2-81)

177. SPOTTED OWL INVENTORY

1994/95 - 1995/96 ⇒ $176,895

Inventories were performed to determine the abundance, distribution range and habitat use of the northern spotted owl in order to plan long-term strategies to maintain this red-listed species. ⓕ **FRDA** (2-80)

178. VULNERABLE BIRD SPECIES INVENTORY

1992/93 - 1994/95 ⇒ $53,096

Nesting surveys of Great Blue Heron, bald eagles and Osprey were conducted in the Lower Mainland to assess their population status. Recommendations to implement a conservation strategy included continuing the monitoring of nest and foraging sites, establishment of a "disturbance-free" buffer zone, and implementation of public education programs. ⓕ **FRDA** (2-57)

THOMPSON-NICOLA

179. FLAMMULATED OWL HABITAT EVALUATION

1995/96 ⇒ $589

Fledglings were radio tagged and their movements were monitored for 48 hours. A pamphlet concerning forest management of flammulated owl habitat was initiated. (3-72)

KOOTENAY

180. BAT DIVERSITY

1994/95 - 1995/96 ⇒ $15,426

This study examined the impacts of forest harvesting on the distribution, abundance, diversity, roost site selection, and foraging activity of bats. (4-113)

181. EAST KOOTENAY CURLEW MONITORING

1992/93 ⇒ $10,963

Curlew nesting sites were re-visited to determine if their population status had changed since a 1985/86 study. The use of habitat by curlews was characterized to determine how land use, grazing systems and vegetative conditions may be affecting this bird. (4-17)

182. HABITAT ASSESSMENT AND PLANNING TOOL FOR BOBCATS

1994/95 - 1995/96 ⇒ $24,694

Bobcats were radio-collared to determine the distribution of their critical winter habitats. This information was mapped to aid in establishing guidelines for habitat and forest management. (4-116)

183. MATURE COTTONWOOD PROTECTION

1992/93 - 1993/94 ⇒ $17,675

Wire cages were placed around the base of large diameter aspen to protect them from beaver damage. Many threatened bird species use these stands as their habitat. (4-99)

184. MOUNT BROADWOOD ENHANCEMENT

1992/93 - 1993/94 ⇒ $84,300

A detailed biophysical inventory was conducted for Mount Broadwood, a key wintering area for wild ungulates. (4-110)

185. PURCELL CARIBOU

1992/93 - 1994/95 ⇒ $73,700

Mountain caribou were radio-collared to determine their seasonal patterns of habitat use and habitat requirements. This information will be of value in forest management planning and land use strategies. (4-103)

CARIBOO

186. CARIBOO GRASSLAND BIRD DIVERSITY

1992/93 ⇒ $1,485

The abundance and diversity of birds were measured during the breeding season in thirteen grasslands sites around Riske Creek in the Chilcotin. A particular emphasis was made on the long-billed curlew. Information was also collected on vegetation composition, vegetation structure, and insect abundance. (5-54)

187. CHILCOTIN RANGES HABITAT MAPPING

1993/94 -1994/95 ⇒ $44,245

Four biophysical habitat maps were produced for the southern Chilcotin ranges. A focus was placed on the identification of important habitats for grizzly bear and California bighorn sheep for protection, management and enhancement purposes. (5-68)

188. MULE DEER WINTER RANGE

1992/93 - 1993/94 ⇒ $22,034

Management plans were prepared to determine which harvest options would be most successful in maintaining critical winter habitat for mule deer near 100 Mile House and Williams Lake. (5-32)

189. QUESNEL HIGHLAND CARIBOU

1994/95 - 1995/96 ⇒ $61,286

Radio-collared mountain caribou were monitored to determine the habitat use patterns and populations dynamics of animals in the eastern sector of the Cariboo region. Researchers determined that old growth forests containing arboreal lichen are required to maintain winter habitat for caribou. FRDA (5-83)

190. SOUTH TWEEDSMUIR GRIZZLY

1992/93 - 1994/95 ⇒ $14,158

Grizzly bears were monitored using radio-telemetry and remote cameras. This information was required to minimize human/bear interactions in South Tweedsmuir Park and the adjacent Bella Coola Valley. Seasonally important habitats were recorded on topographic maps to recommend appropriate enhancement techniques and to determine the impacts of logging, silviculture practices, and human activity. FRDA (5-79)

SKEENA

191. MARTEN HABITAT EVALUATION

1992/93 ⇒ $40,639

A habitat suitability index was developed for marten in the Sub-boreal Spruce biogeoclimatic zone. This index will be used in forest management planning. FRDA (6-21)

192. RACCOON-SEABIRD

1992/93 - 1995/96 ⇒ $82,286

This study analyzed the impact of raccoon introductions to Haida Gwaii's nesting seabird population. Efforts to control the growing population of raccoons were made. Raccoons were monitored to evaluate the control methods used and to develop more effective management strategies. FRDA (6-22)

193. TELKWA CARIBOU

1994/95 ⇒ $8,721

Surveys were conducted in the mountains surrounding the Bulkley Valley in an attempt to locate caribou for radio-collaring. This was done to refine population estimates. (6-60)

OMINECA/PEACE

194. PEACE RIVER WHITE-TAILED DEER

1992/93 ⇒ $7,504

Radio telemetry was used to investigate the cover requirements and foraging habits of white-tailed deer in order to identify habitat enhancement and protection strategies. A comprehensive report with recommendations for habitat enhancement and protection was produced. (7-48)

195. DISTRIBUTION OF BATS IN THE LIARD ZONE

1995/96 ⇒ $24,754

The location and species name of captured bats were recorded to gain a better understanding of their distribution. (7-83)

196. DIVERSIONARY FEEDING

1994/95 - 1995/96 ⇒ $21,425

Female moose were captured, radio collared and relocated to document moose calving areas and monitor moose calf survival. Bait was placed around the Parsnip River for black bears, grizzly bears and wolves in an effort to decrease predation on moose calves. (7-85)

197. DONNA CREEK FORESTRY/BIODIVERSITY

1992/93 - 1993/94 & 1995/96 ⇒ $15,825

An assessment was conducted to determine which alternative harvesting techniques would maintain critical habitat beneficial to cavity nesting birds and mammals. Spring breeding bird surveys and winter furbearer track surveys were conducted to evaluate the success of the different harvesting methods. FRDA (7-55)

198. LICHEN ABUNDANCE MANUAL

1993/94 ⇒ $2,500

Development work was conducted on a field manual called *Estimating the Abundance of Arboreal Forage Lichens*. This manual is an effective tool for the management of mountain caribou winter range. **FRDA** (7-76)

199. MCGREGOR HABITAT CAPABILITY MAPPING

1992/93 - 1993/94 ⇒ $2,925

Four maps were completed depicting the terrain, habitat and wildlife suitability for caribou in the McGregor watershed. **FRDA** (7-46)

200. NORTHEAST BURN EVALUATION AND MONITORING

1992/93 - 1993/94 ⇒ $10,112

An assessment was conducted of sites in the Liard subregion that were treated by prescribed burning over the last decade. Data collected from habitat and vegetation monitoring, and biophysical inventories were entered into the habitat monitoring database. Additionally, a digital base map was created to be used as a guide in planning future prescribed fire programs. **FRDA** (7-51)

201. NORTHEAST LANDSCAPE DIVERSITY

1995/96 ⇒ $52,000

Data forms and photographs were compiled to be used in conjunction with site history records for development of a Five Year Landscape Diversity Plan. This plan would be created to improve biodiversity in the Fort Nelson and Fort St. John Forest Districts. (7-96)

202. PLAINS BISON DEMOGRAPHICS

1994/95 - 1995/96 ⇒ $29,761

In the Sikanni and Halfway watersheds, adult female bison were radio-collared to monitor their habitat use requirements. (7-88)

OKANAGAN

203. SAGE THRASHER HABITATS

1994/95 - 1995/96 ⇒ $30,813

Breeding areas of the endangered sage thrasher were located. Habitat use requirements and potential population impacts were identified to create recommendations for habitat protection and enhancement. (8-111)

204. SOUTH OKANAGAN GRASSLAND RESEARCH

1994/95 ⇒ $34,490

The species composition and population structure of vascular plants, small mammals, birds and ground-dwelling arthropods were examined from an antelope-bitterbrush ecosystem. Ten sites were investigated, each with a different land-use history. (8-112)

205. WESTSIDE SHEEP

1994/95 ⇒ $8,890

A helicopter survey was conducted to determine the abundance and distribution of California bighorn sheep. Biophysical mapping allowed the data to be used for future population and habitat enhancement projects. (8-116)

206. GRANBY GRIZZLY HABITAT

1992/93 ⇒ $2,457

Habitat stratification and assessment of bear presence were conducted by a combination of fixed wing and helicopter flights and by ground transect, undertaken on a multi-season basis. An evaluation of available habitats and seasons was conducted. Appropriate data of wildlife/habitat in the region of Granby and Main Kettle watersheds (currently undergoing timber development) will be used in future resource extraction planning for timber. **FRDA** (8-66)

233. Nechako Aspen Grading

ANIMAL TRANSPLANTS

Transplanting animals from large donor populations, to more vulnerable groups, can save smaller populations. Transplants boost indigenous wildlife populations that have been reduced or eliminated by die-offs, harsh climatic conditions, destruction of habitat, or site specific over harvests. Radio tagging is often used to monitor transplanted animals and evaluate the success of a transplant.

VANCOUVER ISLAND

207. SAN JUAN ELK TRANSPLANT
1992/93 - 1994/95 ⇒ $12,381

Roosevelt elk were transplanted from central Vancouver Island to the lower San Juan River near Port Renfrew. A quarter of these elk were radio-collared to monitor their movements, providing important information on herd home range extent and habitat use patterns. This information will provide guidance for future transplants. (1-5)

LOWER MAINLAND

208. POWELL RIVER ELK
1992/93 - 1995/96 ⇒ $10,136

Elk were relocated from Pender Harbour to Nanton Lake near Powell River. (2-35)

THOMPSON-NICOLA

209. FOUNTAIN RIDGE GOAT TRANSPLANT
1994/95 ⇒ $9,241

Goats were transplanted to Fountain Ridge in an attempt to restore their historical population. (3-73)

210. THOMPSON-NICOLA ELK RECOVERY
1995/96 ⇒ $15,000

A feasibility study was performed to determine the potential of transplanting Rocky Mountain elk to re-establish them throughout their historical range. (3-80)

211. THOMPSON-NICOLA BURROWING OWL
1992/93 - 1995/96 ⇒ $30,710

Burrowing owls, a provincially endangered species, were released at five sites in the South Thompson uplands and Thompson basin. Each burrow was monitored and animal movement, burrow use and prey consumption were recorded. (3-61)

KOOTENAY

212. EAST KOOTENAY FISHER TRANSPLANT
1994/95 - 1995/96 ⇒ $40,029

In an attempt to expand the existing range of fishers in the province, animals were released during the spring around the Gold Creek drainage. (4-115)

213. WEST KOOTENAY MOUNTAIN GOAT TRANSPLANT
1992/93 ⇒ $15,028

Mountain goats were re-introduced to their traditional range in the Slocan Valley. (4-75)

CARIBOO

214. CARIBOO FISHER
1992/93 - 1994/95 ⇒ $21,599

The habitat requirements of the fisher were examined and a transplant methodology was developed. FRDA (5-43)

215. ELK ENHANCEMENT ASSESSMENT
1992/93 ⇒ $10,000

An assessment was conducted on interactions between the giant liver fluke and elk to determine whether elk can be re-introduced into the Cariboo region. (5-69)

216. TASEKO BIGHORN SHEEP TRANSPLANT
1994/95 ⇒ $30,019

Thirty-two California Bighorn sheep were transplanted to release sites at Taesko Mountain and Tosh Creek within the Eastern Chilcotin ranges. These transplants will supplement declining populations in those areas. (5-86)

217. UNGULATE TRANSPLANT ASSESSMENT

1993/94 ⇒ $8,996

Aerial counts were performed to determine the success of woodland caribou, California bighorn sheep and mountain goat transplants that have been conducted in the Cariboo sub-region. Minimum population size, age ratios, antler characteristics and sex ratios were reported. (5-80)

218. EAST KOOTENAY GOATS

1992/93 ⇒ $18,495

Mountain goats were captured at sites in the Elk Valley and at Sulphur Creek and released at a site in Mount Broadwood near Elko. The transplant was undertaken to re-establish a goat population that was severely reduced because of over exploitation or population stagnation. (4-61)

SKEENA

219. ATLIN MOUNTAIN SHEEP TRANSPLANT

1994/95 - 1993/94 ⇒ $45,629

Twenty four Stone's sheep were transplanted to Table Mountain after being extirpated there in the mid-1900's. (6-46)

220. EVALUATING THE SUCCESS OF TRANSLOCATING CONFLICT BEARS IN THE SKEENA REGION

1995/96 ⇒ $17,293

This project examined whether the methods for relocating conflict black and grizzly bears are successful. (6-61)

OMINECA/PEACE

221. WOOD BISON RECOVERY

1994/95 - 1995/96 ⇒ $56,792

Forty-nine wood bison were re-introduced near Aline Lake in an attempt to re-establish the historical range of this endangered animal in northeastern BC. (7-45)

OKANAGAN

222. BURROWING OWLS

1992/93 - 1993/94 ⇒ $16,569

Burrowing owls were transplanted to the South Okanagan from central Washington. Burrow use was monitored and band-reading attempts were performed to determine how many owls returned. (8-6)

242 Hammer's Hats - Cherry Creek

VEGETATION MANAGEMENT

Several techniques are used where vegetation management can enhance food or cover for wildlife. Stands of willow and aspen are slashed or mechanically knocked down to encourage growth of succulent new foliage at or near ground level. Other forested areas may be cleared and replanted with cuttings of preferred food species. Thinning or selective logging is used to reduce dense overhead cover. Other techniques include avalanche initiation, prescribed grazing, fertilizer application and weed control.

VANCOUVER ISLAND

223. VANCOUVER ISLAND LOOSESTRIFE
1992/93 ⇒ $10,000

An intensive survey was conducted in south-eastern Vancouver Island to evaluate the frequency and abundance of purple loosestrife. This information was recorded on a map and a study was conducted to determine the feasibility of implementing a control plan at specific sites. (1-71)

THOMPSON-NICOLA

224. MULE DEER FORAGE AND SLASH
1992/93 - 1993/94 ⇒ $13,114

Extensive thinning and slashing were performed in the dry Interior Douglas-Fir biogeoclimatic zone to improve habitat for mule deer and blue grouse. **FRDA** (3-20)

KOOTENAY

225. ELK VALLEY ELK ENHANCEMENT
1992/93 ⇒ $23,518

To increase elk carrying capacity and foraging range, aspen stands were fertilized and preferred species were seeded. Vegetation monitoring and baseline mapping of treated locations have also been performed. (4-31)

226. INITIATION OF AVALANCHES
1993/94 - 1994/95 ⇒ $3,567

Artificial initiation of avalanches improved foraging areas for bears, elk, mountain goats, mule deer and moose. (4-77)

227. LA FORME CREEK GIRDLING
1992/93 ⇒ $1,057

Selected trees in young stands of deciduous and coniferous trees were girdled to create wildlife trees which serve as a substrate for lichen growth. This provided winter forage for mountain caribou. **FRDA** (4-85)

228. PURPLE LOOSESTRIFE ERADICATION
1992/93 - 1995/96 ⇒ $18,618

To prevent the further spread of purple loosestrife, a non-native plant, two strategies were implemented. A public awareness campaign was started to educate people on this plant's damaging effects. Also, the plant was physically removed by digging, hand pruning and pulling. (4-98)

CARIBOO

229. CATTLE GRAZING AND GRASSLAND BIODIVERSITY
1992/93 - 1995/96 ⇒ $122,038

Wildlife species occupying grassland habitats were inventoried. An emphasis was placed on those that are red and blue listed, including the silver-haired bat and yellow-breasted chat. Recommendations were made on habitat enhancement activities that would reduce the impacts of cattle grazing on biodiversity. **FRDA** (5-67)

230. GASPARD SASKATOON MONITORING
1994/95 ⇒ $4,533

The survival rate of planted Saskatoon seedlings were monitored using survey techniques. A high 87% survival rate makes Saskatoon planting a viable method for enhancing mule deer winter range. **FRDA** (5-30)

OMINECA/PEACE

231. CHILAKO RIVER FORAGE ENHANCEMENT

1992/93 ⇒ $20,000

Mature willow stands along the Chilako River, between Gregg Creek and Dahl Creek, were treated using slashing techniques. This created thirty-one openings to improve moose and deer range. (7-54)

232. GROVE BURN BROWSE

1992/93 ⇒ $7,062

Blocks were treated with caterpillar tractors and power saws, then evaluated in their ability to regenerate willow stands. These willow stands will provide important foraging habitat for moose. (7-1)

233. NECHAKO ASPEN GIRDLING

1993/94 - 1995/96 ⇒ $14,938

Girdling and felling were studied as methods to reduce canopy closure in aspen stands, thereby increasing understory shrubs and herbs used as forage by moose and mule deer. The effectiveness of these methods were assessed using vegetation and wildlife monitoring. FRDA (7-78)

234. PINKERTON PARTIAL CUTTING

1992/93 - 1994/95 ⇒ $18,188

The single tree selection silvicultural system was used as a method of partial cutting in old-growth forests to maintain winter range for mountain caribou. The effects of partial cutting on arboreal lichen were examined by measuring their abundance and growth rates. FRDA (7-49)

OKANAGAN

235. ASHNOLA FENCE

1994/95 ⇒ $9,924

A barbed wire fence in Gillanders-Joe Basin was replaced with a smooth wire fence, and repairs were made to an existing smooth wire fence. This was completed to exclude cattle from the California bighorn sheep winter range. FRDA (8-105)

236. OKANAGAN LOOSESTRIFE

1992/93 - 1993/94 ⇒ $12,332

Purple loosestrife in the Okanagan Valley was monitored to determine its abundance and distribution. Biological and mechanical control methods were assessed to determine their effectiveness in deterring the spread of this non-native species. (8-71)

WETLAND MANAGEMENT

Dam construction, dyke breaching, diversion construction, pond creation and water level manipulation are used where wetlands are managed for a variety of wildlife species. Other wetland enhancement activities include building or improving nesting areas, removing log debris to improve marsh habitat, and introducing desirable indigenous aquatic plants.

VICTORIA

237. PACIFIC ESTUARY CONSERVATION PROGRAM

1995/96 - 1992/93 ⇒ $114,613

Coastal wetlands were enhanced and rehabilitated using techniques such as dyke breaching, sill construction, re-establishment or creation of tidal channels, and biological control of invasive purple loosestrife. (0-4)

VANCOUVER ISLAND

238. WETLAND MANAGEMENT PROGRAM

1992/93 - 1995/96 ⇒ $55,000

Designated reserves were established to protect a salt marsh and maturing second growth forest. A management strategy was completed for the new Parksville-Qualicum Beach Wildlife Management Area. Fencing projects helped prevent habitat damage by vehicles. (1-42)

LOWER MAINLAND

239. FRASER VALLEY WETLANDS HABITAT

1992/93 - 1994/95 ⇒ $84,020

Wetlands were inventoried to determine priority levels for protection measures. (2-49)

240. NICOMEKL FLOOD PLAIN ENHANCEMENT

1992/93 ⇒ $5,000

A pond was created on the Nicomekl Flood Plain, in the city of Langley, to enhance an existing wetland. Also, tree planting and grass seeding provided cover and food for wetland waterfowl. (2-54)

241. SERPENTINE WETLANDS ENHANCEMENT / SERPENTINE SOUTH DU PEN ENHANCEMENTS

1993/94 - 1994/95 ⇒ $61, 923

To increase diversity and efficiently manage waterfowl and raptor habitat, patterns of vegetation diversity were improved using various agricultural and mechanical techniques. (2-78 and 2-55)

KOOTENAY

242. BUMMERS FLAT - CHERRY CREEK

1992/93 - 1994/95 ⇒ $25,512

Most of the Bummers Flat-Cherry Creek area is riparian habitat supporting a wide diversity of waterfowl. Enhancement activities included seeding and planting, monitoring vegetation growth and wildlife use, removing or relocating fences, and controlled burning. (4-56)

243. CORN CREEK WETLAND ENHANCEMENT

1994/95 ⇒ $19,806

Water level manipulation and selective removal of cattails, moss and reed canary grass were used to restore wetland habitat. (4-114)

CARIBOO

244. CHILCOTIN LAKES AND MARSHES

1993/94 - 1994/95 ⇒ $44,463

Fences were replaced around critical wetland habitats near Chilcotin lakes and marshes, preventing further damage from livestock grazing. (5-45)

SKEENA

245. DELKATLA WILDLIFE SANCTUARY RESTORATION

1994/95 ⇒ $168,085

A causeway was replaced with a bridge to restore tidal access to the wildlife sanctuary. Extensive vegetation and bird surveys were conducted to determine how the species composition has changed since tidal flow was restored. (6-41)

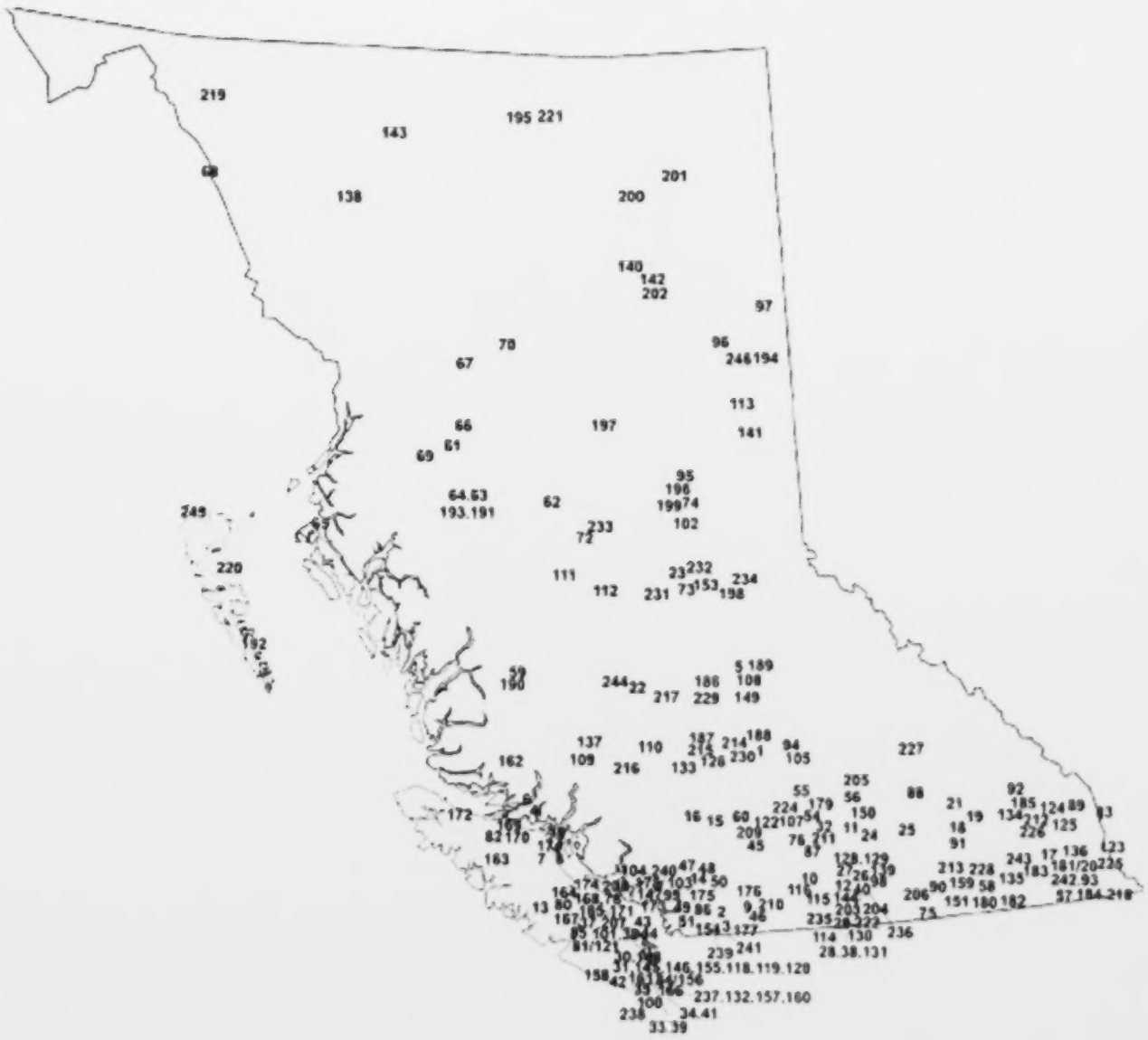
OMINECA/PEACE

246. BEAR FLATS POTHOLE ENHANCEMENT

1994/95 ⇒ $19,688

A fence was erected around four wetland sites to prevent livestock damage to sensitive waterfowl habitats. Additionally, nesting and roosting habitat was enhanced though the construction and placement of nesting islands and boxes. (7-80)

Distribution of Enhancement Projects
1992 - 1996



Acquisition Account

Land acquisitions benefit many fish and wildlife species through the direct purchase of essential habitats from private owners or corporations. Most properties are purchased through funding partnerships with a variety of organizations. Major partners are: Ducks Unlimited Canada, Greater Vancouver Regional District, The Nature Trust of BC, Wildlife Habitat Canada, Environment Canada and Fisheries and Oceans Canada. Money for acquisitions comes from the Crown Land Fund of the Province of BC and from surcharges on angling, hunting, trapping, and guiding licences.

Between 1992 and 1996 HCF spent $2.8 million to purchase 15 properties with an area of 531 hectares. The projects listed below can be located on the map on page 39 by their project numbers.

PACIFIC ESTUARY CONSERVATION PROGRAM

During the 1992 – 1996 reporting period, the Habitat Conservation Fund provided $1.7 million to the acquisition work by the Pacific Estuary Conservation Program. This amounts to a contributory share of 27% by HCF to the partnership program.

PROJECT	HCF CONTRIBUTION (%)	HECTARES ACQUIRED (HA)
1. Parksville Flats (Englishman River) *1992- 1993*	34	65.00
2. Kumdis Bay (Kumdis River) *1992 -1993*	48	26.70
3. Gunn & Williamson Islands *1993 – 1994* (South Arm Marshes, Fraser River)	23	40.87
4. Westham Farms (Fraser River) *1994 –1995*	19	142.77
5. Simpson Farm (Courtenay Estuary) *1995 –1996*	27	8.70

BIODIVERSITY

Six of the seven properties purchased under this category were in the South Okanagan – one of Canada's three endangered ecosystems.

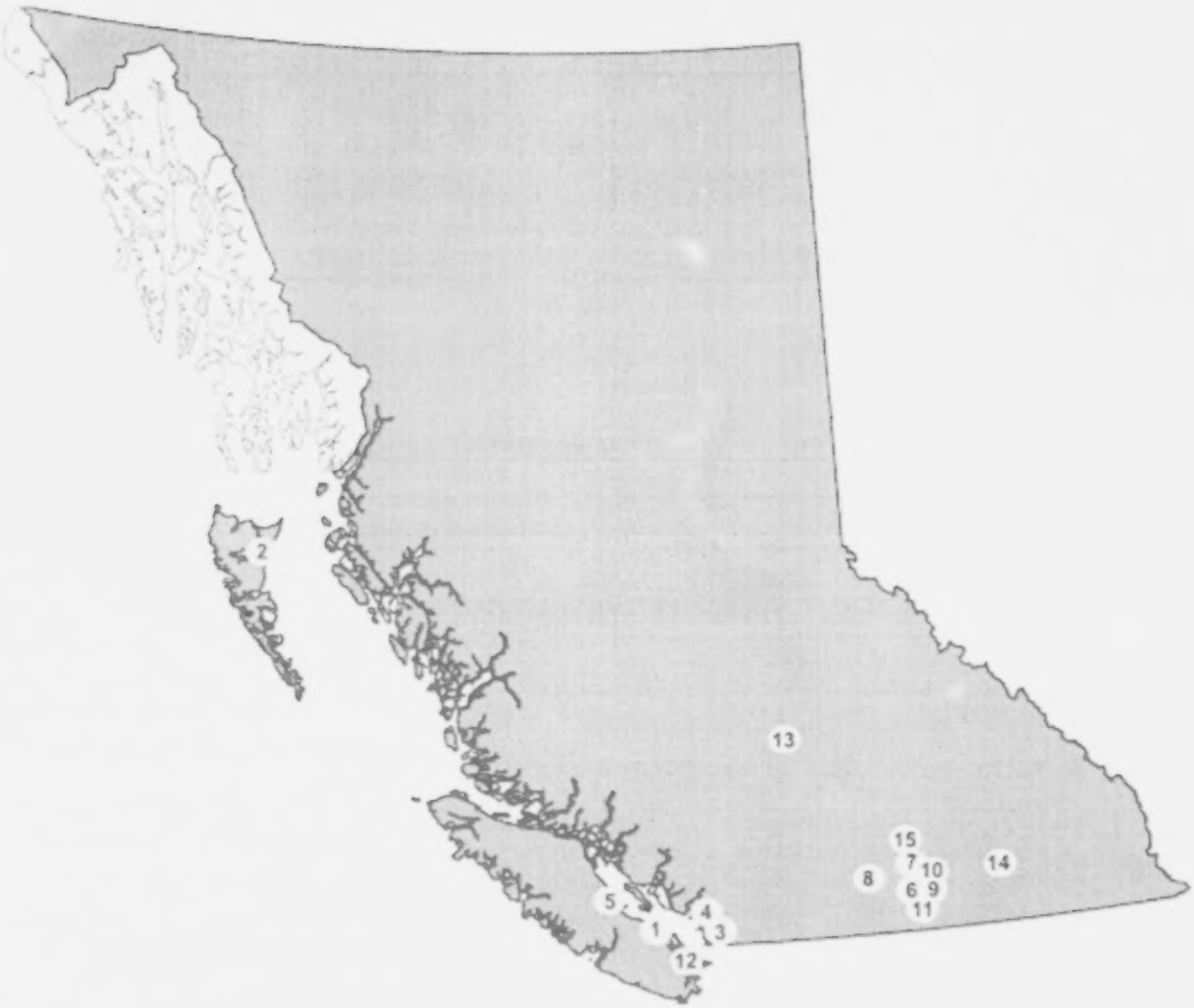
PROJECT	HCF CONTRIBUTION (%)	HECTARES ACQUIRED (HA)
6. Brock Properties (Vaseux Lake) *1992 – 1996*	50 100	3.20 1.00
7. Thomas Ranches (Okanagan Falls) *1993 – 1994*	50	90.00
8. Franmar Property (Vaseux Lake) *1994 – 1995*	49	3.64
9. Kilpoola Lake (Osoyoos) *1994 – 1995*	38	46.50
10. Schneider Property (Vaseux Lake) *1994 – 1995*	100	52.00
11. Osoyoos Lake (Osoyoos) *1995 – 1996*	97	4.07
12. Medicine Beach (Pender Island) *1995 – 1996*	18	20.00

FISHERIES / WATER

Three sites were acquired to protect aquatic habitat for fish and waterfowl.

PROJECT	HCF CONTRIBUTION (%)	HECTARES ACQUIRED (HA)
13. Dale Lake (Cariboo) *1993 – 1994* Donation of land by BC Telephone Co.	0	20.00
14. Winlaw Creek (South Slocan) *1995 – 1996*	100	4.00
15. Mission Creek, Haase Pond (Kelowna) *1995 – 1996*	100	3.00

Distribution of Acquisition Projects
1992 - 1996



Compensation Donation Account

During the 1992 to 1996 fiscal period six enhancement projects and one acquisition were financed through the Compensation Donation Account.

Enhancement

FISHERIES

LOWER MAINLAND

(Suter Brook Compensation Donation)

1. **SUTER BROOK ENHANCEMENT**
   1992/93 ⇒ $3,000

   An existing culvert was replaced with an open channel to permit anadromous salmon and trout access to valuable habitats upstream. The new open channel was also designed and constructed to serve as spawning and rearing habitat

THOMPSON – NICOLA

(Highland Valley Compensation Donation)

2. **LOGAN LAKE AERATION**
   1992/93 ⇒ $3,001

   The Logan Lake Aeration System was replaced. The construction of an artificial spawning channel provides all mature trout the opportunity to spawn and re-enter the sport fishery. The project has developed public awareness and education into the life cycle of trout and the importance of spawning trout.

3. **HIGHLAND VALLEY OPERATIONS AND MAINTENANCE**
   1994/95 ⇒ $1,414

   Three signs were built and installed to describe two previously funded projects such as the Highland Valley Moose Habitat Rehabilitation program and the Steelhead Spawning Enumeration project.

4. **BEAVERHOUSE LAKE DAM REPAIR AND MODIFICATION**
   1994/95 ⇒ $11,925

   Dam spillway repair was completed by installing rip rap to reshape and stabilize the dam and raise freeboard an additional 0.4 metres for increased water storage capacity.

WILDLIFE

THOMPSON – NICOLA

(Highland Valley Compensation Donation)

5. **HIGHLAND VALLEY ENHANCEMENT**
   1994/95 ⇒ $5,210

   Moose winter range enhancement opportunities were assessed. The Highland Valley is prime moose habitat and their presence increases the recreation value of the area.

6. **LOGAN LAKE MARSH SIGN**
   1995/1996 ⇒ $1,000

   A 4' x 6' information sign for Logan Lake Marsh was installed explaining various enhancements initiated on the site by the various contributing sponsors of the project.

ACQUISITIONS

THOMPSON – NICOLA

(Highland Valley Compensation Donation)

7. **STEELHEAD PARK ACQUISITION**
   1992/93 ⇒ $62,000

   118 hectares were purchased to protect salmon spawning sites and provide access to anglers and viewers of the Thompson River and Kamloops Lake.

Habitat Conservation Fund Statement of Cash Receipts and Disbursements for the April 1, 1993 To March 31, 1996 Period

THE ENHANCEMENT ACCOUNT

	1996	1995	1994	1993
Opening Balance	$ 2,586,385	$ 1,505,911	$ 1,192,740	$ 1,016,280
Receipts:				
License Surcharges	4,723,955	4,306,015	2,566,806	2,532,675
Donations, Bequests	2,063	2,768	5,645	40,829
Interest & Misc.	251,366	170,760	164,063	86,687
Land Management	1,605	3,302	3,576	9,283
	$7,565,374	$5,988,756	$3,932,830	$3,685,754
Disbursements:				
Enhancement Projects & Operations	3,646,028	3,402,371	2,426,919	2,493,014
CLOSING BALANCE	$3,919,346	$2,586,385	$1,505,911	$1,192,740

THE ACQUISITION ACCOUNT

	1996	1995	1994	1993
Opening Balance	$ 715,347	$ 561,577	$ 1,080	$ 18,615
Receipts:				
Crown Land Fund Transfer	360,000	1,000,000	1,000,000	940,083
Donations, Bequests	0	0	0	17,468
Compensation	0	0	0	0
	1,075,347	1,561,577	1,001,080	976,166
Disbursements:	591,500	846,230	439,503	974,086
CLOSING BALANCE	$ 483,847	$ 715,347	$ 561,577	$ 1,080

THE COMPENSATION DONATION ACCOUNT

	1996	1995	1994	1993
Opening Balance	$ 502,167	$ 482,789	$ 457,045	476,043
Receipts:				
Interest	43,144	37,927	23,744	31,888
Misc. Revenue	0	0	2,000	14,115
Total Revenue	$ 545,311	$ 520,716	$ 482,789	$ 522,046
Disbursements:				
Enhancement Projects	1,000	18,549	0	65,001
CLOSING BALANCE	$ 544,311	$ 502,167	$ 482,789	$ 457,045

Explanatory Notes: Disbursements for the April 1, 1993 to March 31, 1996 Period

FUND ADMINISTRATION

Administration costs cover staff salaries and administration of project proposals, evaluations and ongoing management of projects. Administration costs also cover office supplies and equipment, computer costs and associated technical support.

For the period reported in this review, fund administration expenses totalled $743,358.

TECHNICAL AND PUBLIC ACCOUNTABILITY

Project proposals were subjected to thorough technical reviews and evaluations by technical reviewers and by the Public Advisory Board. Site visits by the Board, staff of Habitat Conservation Fund and the Ministry of Environment, Lands and Parks are also part of the process of monitoring projects. Technical and public accountability costs are associated with the travel and administration of these activities.

For the period reported in this review technical and public accountability expenses totalled $99,950.

PUBLIC RELATIONS

This category includes expenditures relating to the administration and production of reports, displays, advertising, promotional and fundraising events by the Habitat Conservation Fund to promote its activities and projects to the public.

For the period reported in this review, public relations expenses totalled $129,231.

PUBLIC CONSERVATION ASSISTANCE FUND PARTNERSHIP

The Habitat Conservation Fund supports the Public Conservation Assistance Fund (PCAF) by providing partnership funding to match the annual project budget from the Ministry of Environment, Lands and Parks, (approximately $50,000). The PCAF provides small grants to community-based conservation groups to complete volunteer conservation projects in all regions of the province.

HABITAT
CONSERVATION
FUND

The Habitat Conservation Fund

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BRITISH
COLUMBIA

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